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A STUDY ON THE DISTRIBUTION OF THE ADJECTIVE IN ENGLISH SCIENTIFIC TEXTS FROM THE EIGHTEENTH AND NINETEENTH CENTURIES

ESTUDO DA DISTRIBUCIÓN DO ADXECTIVO
NOS TEXTOS CIENTÍFICOS EN INGLÉS DOS SÉCULOS XVIII E XIX

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A Pablo y mis padres

Simplemente, gracias.

"The conquest of learning is achieved

through the knowledge of languages."

— Umberto Eco

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RESUMEN

Esta tesis doctoral se ha desarrollado con el fin de estudiar el comportamiento de los adjetivos atributivos en textos científicos escritos en inglés y recopilados en el *Coruña Corpus*.

Para poder realizar este estudio se han utilizado cinco variables. La primera de estas variables está constituida por las dos disciplinas científicas a las que pertenecen los textos analizados, Ciencias de la Vida e Historia. La segunda variable es el tiempo, habida cuenta que los textos fueron escritos entre 1700 y 1900. El sexo del autor constituye la tercera variable estudiada. El lugar donde los autores han adquirido sus hábitos de escritura es la cuarta variable, siendo la última de ellas el tipo de texto.

Para la realización de este estudio he recurrido a distintos programas informáticos. La búsqueda de adjetivos en los textos estudiados se ha llevado a cabo mediante un programa de concordancias, la *Coruña Corpus Tool*, que se distribuye con el *Coruña Corpus*. Todos los datos obtenidos con la *Coruña Corpus Tool* fueron exportados directamente a Microsoft Excel para crear las correspondientes hojas de cálculo. Además de este software se aplicaron diversos tests estadísticos.

A pesar de que en general se considera que el inglés científico se caracteriza por un menor uso del adjetivo y una relativa uniformidad, a lo largo de esta tesis se ha podido comprobar que, por el contrario, existe un

cierto grado de variación y que ésta está en función de factores externos como los utilizados aquí como variables.

RESUMO

Esta tese doutoral desenvolveuse co fin de estudar o comportamento dos adxectivos atributivos en textos científicos escritos en inglés e recompilados no *Coruña Corpus*.

Para poder realizar este estudo utilizáronse cinco variables. A primeira destas variables está constituída polas dúas disciplinas científicas ás que pertencen os textos analizados, Ciencias da Vida e Historia. A segunda variable é o tempo, habida conta que os textos foron escritos entre 1700 e 1900. O sexo do autor constitúe a terceira variable estudada. O lugar onde os autores adquiriron os seus hábitos de escritura é a cuarta variable, sendo a última delas o tipo de texto.

Para a realización deste estudo recorrín a distintos programas informáticos. A busca de adxectivos nos textos estudados levouse a cabo mediante un programa de concordancias, a *Coruña Corpus Tool*, que se distribúe co *Coruña Corpus*. Todos os datos obtidos coa *Coruña Corpus Tool* foron exportados directamente a Microsoft Excel para crear as correspondentes follas de cálculo. Ademais deste software aplicáronse diversos tests estatísticos.

A pesar de que en xeral se considera que o inglés científico se caracteriza por un menor uso do adxectivo e unha relativa uniformidade, ao

longo desta tese se puido comprobar que, pola contra, existe certo grao de variación e que esta está en función de factores externos como os utilizados aquí como variables.

ABSTRACT

This dissertation has been carried out in order to study the behaviour of attributive adjectives in English scientific texts from the *Coruña Corpus*.

To perform this study five variables have been used. The first of these variables consists of the two scientific disciplines to which the texts analysed belong, Life Sciences and History. The second variable is time, given that the texts were written between 1700 and 1900. The sex of the author is the third variable studied. The place where the authors have acquired their writing habits is the fourth variable, being the last one the text type.

For this study I have resorted to various software. The search for adjectives in the texts studied was carried out through a concordance program, the *Coruña Corpus Tool*, which is distributed with the *Coruña Corpus*. All data obtained with the *Coruña Corpus Tool* were exported directly to Microsoft Excel to create the corresponding spreadsheets. Besides this software several statistical tests were applied.

Although it is generally considered that the scientific English is characterised by a less use of adjectives and a relative uniformity, throughout this dissertation it has been confirmed that, on the contrary, there is some degree of variation and it depends on external factors such as the variables used here.

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INTRODUCTION

Although many works have been written about adjectives (Quirk *et al*, 1985, Bhat, 1994; Moskowich, 2002; Crystal, 2006), no work has so far addressed the use of attributive adjectives in scientific writing from the same approach I have applied. Adjectives have been defined as words used to characterise other words, denoting properties or qualities of such words (Crystal, 2006; Dryer, 2007). Syntactically speaking, attributive adjectives are the ones which premodify the head of a noun phrase (Aarts and Aarts, 1982; Quirk, 1985; Greenbaum, 1996; Biber, 1999). From a semantic perspective, they restrict the reference of the noun (Quirk, 1985) and according to Bolinger (1967) and Bhat (1994), attributive adjectives tend to denote fairly permanent properties. For Rind and Tillinghast (2008: 83) "what makes an adjective attributive is the fact that it cannot be used to

make a logically complete predication unless it modifies some substantive expression". Moreover, Borer and Roy (2010) believe that the majority of the adjectival expressions in nominal contexts are attributive adjectives.

Scientific English is generally credited to be devoid of ornaments and, therefore, probably not to use many adjectives in their attributive position. When found, these would rather be placed in a predicative position as they serve the purpose of describing objects or processes. It is precisely the aim of this work to study the use of the attributive adjective in scientific English to see up to what an extent the premise of simplicity and plainness claimed by Bacon and Boyle is fulfilled in the late Modern period. In order to do so, texts from two scientific disciplines in *The Coruña Corpus: of English Scientific Writing* (1700-1900), will be analysed. These texts have been grouped into two subcorpora: *CELiST* (*Corpus of English Life Sciences Texts*) and *CHET* (*Corpus of History English Texts*). The disciplines represented in each of these subcorpora belong to different Fields of Science and Technology (UNESCO, 1978), that is to say, Life Sciences belongs to the field of Natural Sciences and History to the field of Humanities.

The period under study coincides with the development and reinforcement of both disciplines as well as the emergence and consolidation of schools and academies of science. On the one hand, Life Sciences renewed its approach to a scientific understanding of living things

with the development of physical science. On the other, History was much in demand during the eighteenth century and historiography as a whole took on its modern form along the nineteenth century.

The descriptive study I will present here revolves around both the extra-linguistic variables provided by the *Coruña Corpus* and two semantic categorisations of the word-class adjective. In order to achieve this aim I have divided this research work into five chapters. Chapter 1 offers a historical contextualisation of scientific writing in late Modern English presenting both contemporary and present-day perspectives. It also includes an overview of the writing traditions in both disciplines.

Chapter 2 deals with the word-class adjective. It explains the differences between adjectives and other word-classes and also the functions these adjectives can fulfil depending on their position in the clause and within the noun phrase. It also explores both semantic and syntactic taxonomies, some of which will be applied later in the analysis. This chapter concludes with an approach to adjectives in the eighteenth and nineteenth centuries as treated by contemporary grammarians.

The information regarding the material for analyses as well as the methodological tools employed for it are introduced in chapter 3. In it, the characteristics of the *Coruña Corpus of English Scientific Writing* are given in detail, focusing on the two subcorpora under survey here. Together with other techniques commonly used in corpus linguistics (the methodology

followed here), other tools have been employed: the *Coruña Corpus Tool* for retrieving information, spreadsheets in which the data have been arranged and the Matlab statistics toolbox. These have been carried out in order to prove the validity of the results and with the intention of checking the existence of statistically significant differences among various categories.

In chapter 4 the findings are presented according to the different variables applied to the data. Such variables are, as mentioned above, the ones provided by the *Coruña Corpus* itself, namely, discipline, date, sex, geographical provenance of the author and type of text. All these variables have been further analysed from two semantic perspectives. A twofold one that classifies adjectives as stative or dynamic and the one provided by Huddleston and Pullum (2002) comprising, in turn, eight different categories.

Finally, some conclusions referred to the above-mentioned research are offered in the concluding section. My initial hypothesis that the frequency and use of attributive adjectives vary throughout the centuries analysed, and that they change depending on the scientific fields in which they are used is assessed here.

Hopefully, this study will also provide a first impression of the effects caused by the recommendations of the Royal Society of London for

Improving Natural Knowledge about the principles of plainness, simplicity and rigorousness with which science should be conveyed.

1. SCIENTIFIC WRITING IN LATE MODERN ENGLISH

As my main concern in this work is to investigate the role of the adjective in scientific texts, this section will deal with how scientific texts were written over the two centuries analysed in my work , the eighteenth and nineteenth centuries; as well as how the two disciplines of science I am going to analyse were seen in those centuries.

Some authors, such as Taavitsainen and Pahta (2004) or Linda Ersham Voigts (1989) state that the vernacularisation of science had begun in the late fourteenth century. However, according to Barber (1976) and Montgomery (1996), the true beginning of scientific writing occurred in the seventeenth century. Montgomery (1996) states that Francis Bacon (1561-1626) was the primary mover of this new way of writing science. In the seventeenth century, the Protestant spirit of intellectual independence

stimulated a rapid growth in scientific discovery in England and a corresponding expansion of the English language to face the new forms of writing (Graddol, Leith and Swann, 1996).

Montgomery (1996: 102) sates that the during the eighteenth century the "ideology of standardization" in the sciences, has been interpreted from the point of view of both the botanist Linnaeus and the chemist Lavoisier, since "both tried to condense an entire field around a self-referential scheme of terminology that presumably embedded all essential knowledge and the logic required to extend it further".

However, besides vocabulary, other factors were seen to operate in scientific prose. Halliday and Martin (1993), studying Joseph Priestley's *The History and Present State of Electricity, with Original Experiments* which was published in the 1760s, developed a brief summary of the features of eighteenth-century scientific writing divided in two kinds of elements: nominal and verbal. The summary of the features devised by these authors became the most highly-valued model for scientific writing by the end of the eighteenth century. Such features are listed in Table 1 below.

Nominal elements	Verbal elements
1. Form technical taxonomes	1. Relate nominalised processes
(a) technological categories	(a) externally (to each other)
(b) methodological categories	(b) internally (to our interpretation of them)
(c) theoretical categories	
2. Summarize and package representations of processes	2. Present nominalised processes (as happening)
(a) backgrounding (given material as Theme)	
(b) foregrounding (rhematic material as New)	

Table 1. Scientific writing features (Halliday and Martin, 1993)

The next subsection deals with how eighteenth- and nineteenth-century science is seen nowadays. Subsections 1.1.1. and 1.1.2. examine in some depth the disciplines of Life Sciences and History.

1.1. Present-day perspectives on late modern science

According to Kramnick (1986: 9), science was the most praiseworthy search of any would-be cultured man. Science was, in fact, according to him, "the crowning glory of an advanced civilization, replacing literature, which was always suspect for the practical and ascetic dissenter since it distracted attention more productive things." At the beginning of the century, science still meant only natural philosophy, including Natural History (Cahan, 2003). Natural philosophy had by then got rid of its

Aristotelian metaphysics. It had rejected any occult qualities when explaining phenomena, adopting new standards of evidence and experiment. Moreover, entirely new sorts of instrumentation were created, and new concepts and results generally adopted.

The spirit of the eighteenth century was one of scientific enquiry and "the eighteenth-century scientific scene was dominated by Newton's brilliant explanation of the doctrines of Copernicus and Kepler" (Taton, 1964: 4). It was the age of science. McLaughlin (1970: 75) stated that this century "was a settled age, firm in its conviction that Truth at last had been found".

Kramnick (1986), Meadows (1987) and Hard and Jamison (2005) believe that the Industrial Revolution of the eighteenth century was a crucial factor in the development of Science. According to Hard and Jamison (2005), the Industrial Revolution of the late eighteenth and early nineteenth centuries corresponded to the development of technology and science. The development of science during the late eighteenth century was due to the relation of England and the rising industry, the political reform, and a liberal theology (Kramnick 1986).

Religion is also an important factor in the development of science over the eighteenth and nineteenth centuries. Basil (1972) holds that Science could, for a while, provide Natural Religion with one of its two indispensable foundations, that is, the belief in a divine Universe. This could

be due to the fact that the findings of science were liable to merge with some assumptions inherited from Christianity. According to Kaiser (1991), the theological beliefs continued to play an important role in the development of Natural Sciences throughout the eighteenth century and well into the nineteenth century. Wolf (1952) and Momma and Matto (2008) also considered the importance of theological beliefs in the development of Natural Sciences; however, they thought that the "Age of Reason" was characterised by the revolts against the authority of Churches, the "divine rights".

Some authors (Pledge, 1939) mention other extraneous factors such as war, with the development of weaponry, in the development of science. The eighteenth century was one of long maturing of ideas in the field of physics, heat and chemistry and physiology, mathematics and geology. All throughout this period, science expanded beyond the research, such as learned societies and periodicals. In other words, science became popular in society.

The scientific activity (from the late eighteenth century until the early twentieth century) was subjected to enormous and unpararelled intellectual and social changes. There was an unprecedented institutional growth and it had a large role in reshaping society (Cahan, 2003). According to Taton (1964), scientific studies helped everyday life; for instance a better knowledge of astronomy enabled navigators to improve a

method of determining longitude at sea and a better knowledge of mathematical acoustics led to the improvements of musical instruments. Theoretical studies also had repercussions on everyday life such as on the techniques of dyeing, bleaching, spinning, weaving and engineering.

By the middle of the nineteenth century, science was supported by one or more of three major sources. The first of these sources was socio-cultural; the second one was private, being the third source the government (Inkster, 1991).

Regarding the first type of support, and according to Hard and Jamison (2005), the salons in eighteenth-century Paris were the places where thinkers and artists discussed and debated. These salons were crucial places in the assimilation and dissemination of knowledge. Also books and journals have been essential in these processes, as well as formal institutions such as universities and scientific societies. Without the existence of these places, the leading enlightened thinkers, the so-called *philosophers*, would have never been able to turn their individually held ideas into a collective project.

In relation to the second type of support, by the beginning of the eighteenth century, "academies and societies existed to stimulate research by inciting individuals to undertake investigations privately, to reward those who undertook research successfully, and to communicate research reports" (Hall, 1983: 209). The formation of national academies began in the

seventeenth and eighteenth centuries, with the creation of The Royal Society of London in 1662 and The French Academy of Sciences established in 1666. Along the latter part of the eighteenth century and the early nineteenth century local scientific societies in several countries such as France, Hungary, Italy and those in Scandinavia were created and, by the end of the century, they had spread as far afield as India and Australia (Meadows, 1987; Porter, 2003; Bowler and Pickstone, 2009). According to Cahan (2003: 321) "in 1760, Britain and Ireland had only a dozen formal scientific organizations; by 1870, there were 125, including 59 specialist societies." Specialised scientific societies began to be founded from the 1780s onwards: The Linnaean Society was founded in 1788, the Geological Society in 1807, the Astronomical Society in 1831, and the Chemical Society in 1841. These societies soon became forums for the reporting and support of individual specialised research (Meadows, 1987). Yet, from the 1660s to the 1790s the Royal Society of London was the main institution supporting scientific research in Britain (Cahan, 2003) which received financial support from the state (Porter, 2003).

Porter (2003: 92) claims that "societies had a larger, less structured membership, received less government support, and thought of themselves as more "independent" than their sister academies", where the members presented the results of their research at society meetings. The national academies had several features in common: they all wanted to share and

communicate information and ideas, they wished to communicate their findings abroad by means of publications and, finally, they all had a commitment to the experimental investigation of nature, often encouraged by the posing of problems, for whose solution members were awarded with prizes or premiums (Meadows, 1987). One of the activities of these societies was the organisation of public lectures on scientific and technical topics. Lecturers were men of the first rank in their several fields of study (Wolf, 1952). These lectures did not reach a large audience although they were popular (Meadows, 1987).

Another way of disseminating knowledge was formal education. In the eighteenth century there were two types of teaching: public teaching, which took place at universities, and private courses, which was principally concerned with two branches of knowledge. The first type of private teaching was provided in a range of ancillary medical subjects for learner physicians, surgeons, apothecaries, and even midwives as a supplement to the existing institutionalised provision. In the second type of private teaching, courses and lectures were offered in Physics, Chemistry, Astronomy and other sciences in ever-growing numbers (Altick, 1990; Porter, 2003).

Nevertheless, by the turn of the eighteenth century universities no longer had a monopoly on the teaching of science, since in many countries they were replaced by municipal colleges (Porter, 2003). Universities

catered for the traditional professions (law, medicine and the Church), and their main concern was with handling on traditional material based on Latin or Greek sources (Meadows, 1987).

However, and according to Cahan (2003), during the nineteenth century universities became the principal institutional setting for science; and they were (in principle at least) places where science was pursued for its own sake, independently from any non-scientific pressures. In the nineteenth century, the most basic disciplines established in universities were Botany and Zoology. Within medical faculties the most significant new field was Physiology (Bowler and Pickstone, 2009). By the 1870s, science began to be studied in public and in grammar schools, and there were also courses at universities (Knight, 1986).

In the 1830s specialised journals began to appear. Since they were aimed at a very specific readership they carried short articles written in the jargon of the several sciences, and they were usually written in an expansive style so as to be accessible (Knight, 1986). “The papers were often compulsive reading, but sometimes pedantic” (Knight, 1975: 105). Along the eighteenth century the papers of the Royal Society of London (*Philosophical Transactions*) became very austere and rigorous; and by the beginning of the following century it had acquired a quarto format (Knight, 1975). The articles in The *Philosophical Transactions* were not limited to any special scientific discipline (Porter, 2003), and translations of foreign

scientific articles began to be published too (Knight, 1975). According to this same author, among general journals regional differences could be observed, as well as differences in the social class of the readership. Some other journals were *Philosophical Transactions* and *Philosophical Magazine*, which first appeared in 1798. *Journal of Natural Philosophy, Chemistry and the Arts* (1797), *American Journal of Science* (1818), *Annals of Philosophy* (1813), *The Edinburgh Philosophical Journal* (1819) and *Nature* (1869) (Knight, 1975). However, all these publications had problems. The delay in publication or language barriers were some of them (Porter, 2003).

According to Knight (1986), it was during the Age of Science when the boundaries between the sciences were set. Porter (2003) mentions that during this century there was only limited agreement on how the natural or physical sciences should be classified. Eighteenth-century science was not organised in the same terms as modern disciplines. In fact, there were several possible taxonomies. At the beginning of the century, "Physics" was "the science that teaches us the reasons and causes of all the effects that Nature produces" (Hankins, 1985: 10), and included living and non-living phenomena. Medicine, Physiology, the Study of Heat and Magnetism and Chemistry were included into Physics. Astronomy, Optics, Statics, Hydraulics, Gnomonics, Geography, Surveying and Fortification were part of Mixed Mathematics. Zoology, Botany, Geology, and Meteorology,

although until the nineteenth century these terms were not created, were all subsumed under Natural History (Hankins, 1985: 10). Another way of classifying science followed the Aristotelian tradition, which divided them into speculative or theoretical; practical; and artistic or productive, and within these, sciences in terms of subject, matter and method were also distinguished (Porter, 2003). Another way of grouping scientific knowledge is mentioned by Olby, Canton, Christie and Hodge (1996: 861), where "instead of Bacon's natural divisions based on the fixed and universal character of the human mind, they introduce the notion of conventional, negotiated divisions". Thomas Kuhn (1976) distinguishes between classical (mathematical) and experimental (Baconian) sciences. Classical sciences consisted of a natural cluster of five sciences: Astronomy, Harmonics, Mathematics, Optics, and Statics (or Mechanics). Experimental sciences included a range of empirical inquiries, some of which have been already commonly identified with well-known sciences, such as Chemistry, while others were phenomena for new systematic investigation, such as Electricity, Magnetism, and Heat. The creation of new scientific disciplines was, according to Hankins (1985), probably the most important contribution of the Enlightenment to the modernization of science, and was instigated by a desire of changing the views of nature and its study.

The modern disciplines of Chemistry, Physics, Mathematics, Biology, the Earth Sciences, as well as the Social Sciences, assumed their

more or less contemporary form in the nineteenth century (Cahan, 2003). New terms like *biology* and *physics*, and *biologist* and *physicist*, were created to name the new disciplines and their practitioners (Cahan, 2003 and Porter, 2003). Also the term *scientist* was created to reflect a new general social category (Cahan, 2003; Crespo, 2012). According to Momma and Matto (2008: 232), it was William Whewell, part of whose work has been sampled in the *Corpus of English Texts on Astronomy* (Moskowich *et al*, 2012), who created this term to describe "students of knowledge of the material world". Along this century there were different classifications of science. Thus, in 1830, the positivist philosopher August Comte identified six fundamental sciences: Mathematics, Astronomy, Physics, Chemistry, Physiology (also called Biology) and Social Physics (or Sociology) (Olby, Canton, Christie and Hodge, 1996).

It was also during the nineteenth century that science underwent major transformations. There was a need of specialisation as a consequence of the growth of knowledge. Science changed from an area of learning, where it was exceptional to be paid, to an area in which many scientists were receiving instruction in schools and universities. But this process of specialisation was not automatic (Bowler and Pickstone, 2009). According to Meadows (1987) this process occurred because of an increase in the amount and the complexity of scientific research. However, Charles

Babbage thought that British science was in decline because it was dominated by amateurs (Meadows, 1987).

As a consequence of all these transformations, science became a profession. Between 1810 and 1860, the group of professional scientists tripled its number as a cause of "a rapid growth of specialized scientific forums for the presentation, dissemination or popularisation of knowledge" (Inkster, 1991: 94). By the 1840s specialisation in science was established (Yeo, 1984), and until the 1880s it was misleading to use the categories of "amateur" and "professional" (Bowler and Pickstone, 2009).

Since I will also analyse some texts written by women, I consider it necessary to mention the role of women scientists during the two centuries I will be studying. Over the years science as we know it today was not accessible to women. However, from the end of World War I most formal barriers in their admission to science were broken (Meadows, 1987). The Royal Society of London did not admit the learned Margaret Cavendish, Duchess of Newcastle, although she was well qualified for that position. The Royal Academy of Sciences in Paris also rejected the admission of women, as was the case with Marie Curie (Porter, 2003). No institution elected female members until well on into the 20th century (Meadows, 1987). Nevertheless, Porter (2003) states that noble women formed crucial links across Europe as patrons of science.

It was not until 1868 that women were admitted to the Paris Medical School, they were admitted earlier in some universities, but they could not receive their degrees (Meadows, 1987). A few exceptional women, however, did study and teach at universities. Two of them were Laura Bassi, a physicist, who received a university degree in 1732, the first woman to be awarded a university professorship, and Elena Cornaro Piscopia, who received her university degree in 1678 (Porter, 2003). According to Meadows (1987), when women did get into universities they often had to tolerate the patronising attitude of their male professors.

Since one of the disciplines whose texts I will be analysing in the present study is Life Sciences, the following subsection will deal with it and its status in the eighteenth and nineteenth centuries from a present-day perspective.

1.1.1. Life Sciences in the eighteenth and nineteenth centuries

Although the term *biology* did not appear until the nineteenth century (Hall, 1962; Hall and Hall, 1964; Coleman, 1977) Biology or Natural History has been defined by several authors in different ways. Three of these authors are Hankins, Porter and Murphy. Hankins (1985: 113) has defined Natural History as “an inquiry or investigation into nature; and “nature” in the Aristotelian sense means that part of the physical world that is formed and that functions without the artifice of man.” On the other hand,

Murphy (2000: 45) believes that Natural History "refers to all nonfiction texts that represent the natural environment and personal experience in nature". Finally, Porter (2003) defines it as a "description (then a synonym for "history") and classification of everything in nature, from the cosmos to the insect". For Hankins (1985), since Natural History did not deal with all questions about living things, its purpose was to describe and classify the forms of nature. According to Lu (2010: 157), Natural History writing "combines the qualities of scientific objectivity and literary subjectivity".

The fundamental interests of Biology, during the eighteenth and nineteenth centuries, were, first, geographical exploration, expecting to find and exploit new natural products. Secondly, the requirements of a new medicine, with an emphasis on physiology and anatomy. Thirdly, the needs and problems of the agricultural revolution and, lastly, the needs of vastly expanded industries (Bernal, 1969). These interests interacted and overlapped.

The eighteenth century was the great century of travellers, collectors and classifiers (Bernal, 1969; Meadows, 1987). Classification of facts came from the necessity of arranging plants in botanical gardens, collections in cabinets, and perhaps from the making and printing of catalogues. It is worth remembering that at the very beginning each collector and classifier had his own method and ideas and this resulted in a confusion of names and arrangements (Bernal, 1969). This might be the reason why among the texts

of Life Sciences I will analyse in this work there are several catalogues (Douglas, 1707; Sloan, 1707; Gibson, 1720; Blair, 1723; Boreman, 1730; Blackwell, 1737; Edwards, 1734; Griffith, 1750; Pennant, 1766; Goldsmith, 1774; Bolton, 1789; Smith, 1795).

Bernal (1969) also thought that, scientifically speaking, it was impossible to look at the natural classification of living things and not being forcibly reminded of their relationships. George Louis de Buffon (Bernal, 1969) was one of the first to claim that there was a real relationship between the classification of animals and plants.

Carl Linnaeus tried, in the eighteenth century, to order all realms of nature in a series of taxonomic works devoted to the animal, vegetable, and mineral kingdoms (Singer, 1941; Taton, 1964; Bernal, 1969; Westfall, 1971; Meadows, 1987; Porter, 2003). He proposed a 'sexual system' of classifying plants by their stamens, however, since it was exclusively concentrated on only one floral part, it was rather artificial and thus less advanced than many earlier systems. Nevertheless, this system proved to be most useful for distinguishing species (Taton, 1964). Linnaeus imposed his classification, and the Linnaean Society of London was founded in 1788 (Singer, 1941; Bernal, 1969). Although, according to Meadows (1987), the Linnaean scheme of classification transformed Biology, it "was too rigid to start with; (...) but it was possible to alter it progressively until it became more and more a natural system" (Bernal, 1969: 638).

Georges Louis Leclerc, Comte de Buffon, in the 44 volumes of his *Histoire naturelle, général et particulière* (1749-1804) criticised taxonomies as he saw them being incapable of accurately describing nature in all its variety (Hankins, 1985; Porter, 2003). In opposition to Linnaeus Buffon's answer was to determine species by their reproductive history, not by any characteristics, trying "to establish connections between fertility and size and degree of domestication, and also between hybridization and sex ratio" (Taton, 1964: 513). Buffon's classification put the emphasis on geological change, the historical process, the study of the distribution and migration of forms, as well as the study of the degenerative change of species in time (Olby, Cantor, Christie and Hodge, 1996). Buffon moved from a systematic taxonomy to the image of the Great Chain of Being; which was a linear, hierarchical progression of forms covering from the simplest to the most complex ones (Hankins, 1985). According to Butterfield (1951), Buffon's work shows a new conception of the relations between man and nature.

During the nineteenth century men of science had to pay as much attention to the detail and diversification of science as to the elaboration of essential themes informing Biology during the period (Coleman, 1977). Another contribution to the changing features of nineteenth-century Biology was the invention of the microscope (Singer, 1941). The microscope allowed for the discovery of new natural forms which naturalists had first to classify. This classification would be arbitrary to a certain extent (Hankins,

1985). However, according to Hall (1962: 277), "none of the ancient founders of Biology was primarily interested in collections, description and classification as ends in themselves".

Singer (1941) pointed out that along the first part of the nineteenth century, philosophical naturalists were divided into quite definite groups according to the character of the problem they wanted to solve. There were five separate groups. First, those naturalists who were concerned with comparing external characters of living forms nearly allied to each other, they were called *taxonomists* such as Darwin (who is one of the authors included in the corpus of Life Sciences I am going to study). Secondly, *comparative anatomists*, those who were investigating the inner structure of contrasted forms, such as Müller. Thirdly, those who were engaged in the comparative anatomy of fossil forms, *palaeontologists*, for instance R. Owen. Fourthly, *embryologists*, who were those investigating embryos, such as Von Baer and Kölliker. And finally, *physiologists*, who worked on the analytical study of animal function by means of physical and chemical experiment, some of these authors were Ch. Bell, J. Müller or C. Bernard.

One of the main advances that had been made in Biology was the so-called cell theory. In 1665, the word cell was coined in Robert Hooke's *Micrographia* (Olby, Cantor, Christie and Hodge, 1996). Two centuries later Bichât distinguished tissues by means of the careful study of the different organs of the body. This study was followed by other in which the

new achromatic microscopes allowed to have a far greater insight into the fine structure of tissues, histology. This study revealed that tissues were composed of cells (Pledge, 1939; Bernal, 1969). In 1839, Schleiden and Scawann pointed out that the whole body could be treated as a colony of cells, and what is more, all had arisen from one, or rather, two cells: the cell of the egg and the cell of the sperm (Bernal, 1969). This is what has been called the Cell Theory. Around 1861, the cell had achieved a very different consistency and a very different role ascribed to it from the one Hooke had suggested (Olby, Cantor, Christie and Hodge, 1996). In 1855 Pasteur came into contact with the living ferments and their activities (Bernal, 1969), and he did so by means of his practical work on the diseases of wine and beer (Meadows, 1987).

Another revolutionary idea in Life Sciences is what we know as the Theory of Evolution. According to Hankins (1985), the ideas that would be the base for it appeared during the Enlightenment, although the theory itself did not come to light until the second part of the nineteenth century. Butterfield (1951) pointed out that the idea of evolution was connected with the development of systems of classification in the realm of plants and animals. Linnaeus had already assumed that all individuals in a given species could be traced back to an original pair produced at the Creation.

Charles Darwin (1859) wondered why the most perfect groups of animals, such as mammals, have the most numerous extinctions and most

conspicuous character gaps between their subgroup (Bowler and Pickstone, 2009). He had been particularly impressed by this species problem and he began to think that possibly the conditions of competition of human economic life might also be applied to the animal world. Darwin did more than assert evolution. He provided a mechanism (natural selection) that destroyed the last justification for the Aristotelian category of final causes (Bernal, 1969). Unfortunately, and according to Taton (1964: 514), "the theory of fixity of species failed to explain certain variations which undoubtedly occurred within the same species".

This is the scientific context in which the authors included in *CELiST* were producing their works. Some of these topics were tackled by them in the texts to which the extracts in the corpus belong. As the second discipline I will analyse is History, the next subsection delves into History writing in the modern period from the perspective of contemporary scholars.

1.1.2. Writing History in the eighteenth and nineteenth centuries

History writing, or historiography, is a term to which it is impossible to assign content which is equally applicable to all periods (Black, 1926). History writing is, according to a classification of the fields of science and technology published by UNESCO in 1978 (see Table 10), a branch of Humanities. The origins of historiography are to be found in the intellectual environment which dominated that time due to the expansion of European

Historicism in the eighteenth century (Black, 1926; Barnes, 1962; Olby, Cantor, Christie and Hodge, 1996). The main condition for a historical work to be considered as such is its truthfulness or authenticity relating events that have actually happened as they are described (Ranke, 1981).

According to Cook (1988), modern historiography deals with the connection between the human past and public life, or public events. The historian resorts to evidence he thinks is relevant and then he writes some kind of account that he believes to be accurate and illuminating. This account is a discourse that may conform to the canons of a literary genre, as well as to its conditions of inquiry. It may contain also a thesis which attempts to explain the actions of the past in some domain (Cook, 1988).

Stromberg (1951) stated that historicism was born in the eighteenth century although it did not come to maturity. As a matter of fact, eighteenth century History writing has been defined as a collection of true and value facts (Black, 1926; Stromberg, 1951), even by contemporary writers. Hume (1778: 116) defined History as "a collection of facts which are multiplying without end; and if they are to be made intelligible, they must, in some way, be abridged". He thought that History as a subject of study was justified due to its value as an instrument of education (Black, 1926). For Voltaire, History was a collection of ideas and Gibbon believed that it was an organised sequence of cause and effect (Black, 1926). Voltaire made two

remarkable contributions to historiography. According to Thompson (1942: 66), he

> was the first scholar to survey history as a whole, correlating events in all the great centres of culture on earth and covering all the significant aspects of human life. Secondly, he conceived history as a record of human activity in all its manifestations: art, learning, science, manners, custom, food, technology, amusements, and daily life.

Explanations of the past were supported by different theoretical frameworks. One of them was the stadial theory, in particular, the "four-stages" theory (Porter and Ross 2003). Among its representatives were Adam Ferguson (1769) with his work *An Essay on the History of Civil Society* published in 1767, John Millar whose work *The Origin of the Distinction of Ranks* was published in 1771, and Adam Smith's *Wealth of Nations* published in 1776. The starting point for the four-stages theorists is the intentional explanation of individual actions, based on the rationalist conception of human nature. Thereupon they suggested "essentially *causal* explanation at the collective level", producing these actions unintended consequences by any individual or group**.** The result, in Ferguson's famous formula, was "establishments, which are indeed the result of human action, but not the execution of any human design" (Porter and Ross, 2003: 116).

Historical relativism, which described the past as another country, emerged at the end of the eighteenth century. This relativism inspired new

more concrete forms of writing (Hall, 2010). The rationalist school of historians was born as a reaction against the historical writing of the naturalistic philosophy and the new social philosophy. There was a fundamental unity of method and interest. The main innovation of the rationalist school was to broaden the field of History which went beyond the political integrities of church and state and embraced the history of society, commerce, industry, and civilization in its widest aspects (Barnes, 1962). They enlarged the concept of History to include, at least as Auxiliary sciences, the study of Climate, Geography, Geology, and Physical environment (Thompson, 1942). The members of this school tried to broaden the cultural approach as well as to introduce some embryonic sociological principles into historical analysis (Barnes, 1962). This school also introduced new methods of historical criticism (Thompson, 1942).

According to Bentley (1999), the Enlightenment was only interested in parts of the past, because the present had won a new pedigree at the expense of the past. Their writers still venerated the classical world, and displayed a new enthusiasm for quite recent history.

Historians in the eighteenth century shared some characteristics. Firstly, they no longer studied the past to be able to understand it on its own terms (Breisach, 1983). Secondly, they should pay detailed attention to the history of science (Olby, Cantor, Christie and Hodge, 1996). Thirdly, they should write History in a dignified manner, but principally, they should

write about dignified events and characters (Black, 1926). And fourthly, they had a purely rationalistic concept of History (Thompson, 1942).

Eighteenth-century historians achieved their appraisals of the past with praiseworthy vigour (Barnes, 1962) and, according to Bentley (1999: 9), they displayed an undercurrent of opinion about the past. In order to do that they followed three steps. In the first place,

> they argued a position that shrieked secularism. Second, they reflected cynicism about the motivation and moral capacities of individuals while elevating *l'espirit human* to new levels of moral authority, thus granting the impersonal force what they denied in its agents. Third and most significant, they constructed texts in which satire did not stop at the clerics but rather formed a crucial part of the tone for the entire enterprise.

Black (1926) pointed out that maybe the historians of this century could have treated documents in an amateurish and casual way, and even perverse in their conclusions; but the most important thing about them is that they applied the whole culture of their age and what they knew of the past. According to this author (1926), their goal is to report how society progress, keeping an eye fixed in the goal towards which events and tendencies were making, and to describe the past in the light of this. He stated that History did not have a standard nomenclature vocabulary during the Enlightenment. On the contrary, it was written using a jargon which varied from writer to writer, and was full of implicit assumptions.

In 1782, Giambattista Vico published *New Science,* a work that gave historians a full-fledged theory of History, including proper methods of truth-finding (Breisach, 1983). According to Ranke (1981), the task of the historian is both learned and literary, since History is at the same time art and science. Bentley (1999: 26) said that many historians of this century had a sophisticated view of the relationship between text and evidence, criticising their Enlightenment predecessors for "behaving in a cavalier spirit when faced with stubborn facts". These new historians, such as Macaulay, Hastings or James Mill, had a new interest in India, and in Anglo-Saxon England, trying to glorify and romanticise the British medieval culture (Barnes, 1962).

For Thompson (1942: 295), Macaulay's literary style, in his work *Essay on Milton*, published in 1825, was "readily converted into fluent oratory, and its extraordinary clearness was a powerful asset". Macaulay pointed out that "history must inevitably be written by advocates rather than judges" (Thompson, 1942: 297).

It was during the nineteenth century that historiography as a whole took its modern form (Olby, Cantor, Christie and Hodge, 1996), being its basic canons introduced in Germany (Porter and Ross, 2003). During this century historiography was influenced by liberalism (Barnes, 1962), and, according to Stromberg (1951), History was a kind of instructor of morals and politics. The focus and audience of History writing were taken as a

resistance to the clinical and cold perspectives that were associated with the previous century, to Rationalism (Bentley, 1999). Thompson (1942) affirms that Romanticism appeared as a reaction against the formal logic and the unhistorical reasoning they attributed to the rationalists.

All along the nineteenth century historiography completed its process of professionalisation in Western Europe and the United States. Academic chairs, degree-granting programmes, disciplinary associations and specialist journals were created (Ranke, 1982; Porter and Ross, 2003). Systematic collections of the sources of English national history started at the beginning of the century, the Record Commission being created in 1800 (Barnes, 1962).

In Stromberg's (1951: 301) words, "to the romantics these eighteenth-century rationalists seemed completely useless: unreal and scholastic". Nineteenth-century rationalistic historiography applied the scientific method (Porter and Ross, 2003) which had been previously described by John Locke (1690) as the "plain historical method" (Stromberg, 1951). It consisted of three steps: first, observing the object or subject to which it is to be applied. Secondly, inventing a hypothesis which tends to explain the observations, and thirdly checking the hypothesis against further observations (Cuneo, 1963).

This century was also the period of biographies (Barnes, 1962; Olby, Cantor, Christie and Hodge, 1996). According to Barnes (1962), this was

because the individual was more glamorous and biography was very readily adapted to their literary flights.

Besides the historiographical approaches and methods mentioned so far, two new schools emerged from the universities of Cambridge and Oxford. They continued to cultivate the ancient classics, although they did not instruct on history or modern languages. The two universities and, therefore, the two schools in them held opposite views. The members of the Oxford School founded by Stubbs, believed in free will. For them History was studied for its own sake, and on the strength of all available materials. The Cambridge School was founded by Lord Acton (1834-1902) and further developed by Seeley. For its founder, the science of History was only the art of the collection of historical materials (Thompson, 1942).

These two opposing views close the twentieth-century vision of past historians. In the section that follows, Section 1.2., further divided into subsections 1.2.1. and 1.2.2, I will try to show how the disciplines of Life Sciences and History, respectively, were considered by contemporary authors.

1.2. Late modern perspectives on science

The arrangement of the disciplines within late modern science was different from our present-day taxonomy (see Table 10). There existed the primary areas of Physics, Chemistry, and Biology; and these were in turn

subdivided into subordinate subareas. Furthermore, the method of investigation and the ultimate object of the physical inquirer were the same (Huxley, 1901). In the nineteenth century Babbage (1830) believed that the different sciences might be grouped as Table 2 below shows. In it each column represents the subjects that, according to this contemporary author, would be grouped together.

Modern History	Political Economy	Chemistry	Zoology, including Physiology and Comparative Anatomy
Laws of England	Applications of Sciences to Arts and Manufactures	Mineralogy	Botany, including Vegetable Physiology and Anatomy
Civil Law		Geology	

Table 2. Science division according to Babbage (1830)

At the turn of the twentieth century, Huxley (1901: 65) stated that every science had three stages which are successive. The first stage is "the determination of the sensible character and order of the phenomena". The second stage is "the determination of the constant relations of the phenomena thus defined, and their expression in rules or laws". And, finally, the third stage is "the explication of these particular laws by deduction from the most general laws of matter and motion". The last two stages would constitute what late modern thinkers called Natural Philosophy. For this author (1901: 60), the object of science "is the discovery of the rational order which pervades the universe; the method

consists of observation and experiment (which is observation under artificial conditions) for the determination of the facts of Nature; of inductive and deductive reasoning for the discovery of their mutual relations and connection".

As could be expected, different authors had different views of the reality surrounding them and they perceived science in as many different ways. For instance, Giambattista Vico (1725) believed that science described an ideal eternal history crossed in time by the history of every nation in its rise, development, maturity, decline, and fall. For him the new Science must be a demonstration "of what providence has wrought in history, for it must be a history of the institutions by which, without human discernment or counsel, and often against the designs of men, providence has ordered this great city of the human race" (Bergin and Fisch, 1976: 102). One century later, Fichte (1808: 12) thought that the main characteristic of science consists "in the quality of its content and its relation thereof to the consciousness of the person of whom knowledge is asserted". Whewell (1840: 479) believed that "the various branches of Natural History (…) rest upon the same Idea of Likeness which is the ground of the application of the names, more or less general, of common language". At the beginning of the twentieth century, Huxley (1901) claimed that Physical Science, which is one and indivisible, had its foundation in Newton's *Philosophiae Naturalis Principia Mathematica*. He also declared that

Natural Knowledge wanted to discover the laws of comfort, and in so doing it had ascertained the laws of conduct and established the foundations of a new morality.

The so-called Physical Science, to which I referred above, springs from certain postulates. One of them is the objective existence of a material world. Another postulate is the universality of the law of causation, that is, everything happens provoked by a cause, and the state of the physical universe, at any given moment, is the consequence of its state at any preceding moment. A third postulate is the so-called "laws of Nature", by which the relation of phenomena is truly defined, it is true forever. These postulates are neither self-evident nor are they demonstrable (Huxley, 1901).

But not only science was defined and scientific disciplines were classifiable. Scientists were also described according to their attributes. A scientist must have several characteristics, which included love for science, unlimited patience in reflecting over any subject, industry in observing and collecting facts, and having invention and common sense (Lamarck, 1964; Darwin, 1958). As for their attitude, scientist were characterised in different ways along history. Thus, Lamarck (1964) stated that scientists looked for achieving precision and scrupulous exactitude, and Babbage (1830) believed that scientists must be very precise when performing experiments. Some time later, Huxley (1901) again claimed that a scientist should have an

absolute rejection of authority (in the scholastic sense). He also believed that men of science had learnt to believe in justification by verification.

Although these were general characteristics of science and scientists, each discipline had its own characteristic features. The ensuing sections deal with Life Sciences and History as seen by their authors.

1.2.1. Life Sciences in the eighteenth and nineteenth centuries

Karl Friedrich Burdach, a romantic naturalist, suggested in 1800, "that his coinage *Biologie* be used to indicate the study of human beings from a morphological, physiological, and psychological perspective" (Cahan, 2003: 16). In addition, Schleiden (1849) thought that the Science of Nature embraced the laws of Chemistry and Physics. According to him, those who wanted to make solid advances in Botany would indispensably need a microscope, a good pocket lens, scissors, knife, needle, and pincers and certain re-agents.

According to Charles Darwin (1887), the first thing one has to do in order to be a good researcher in Biology is to gather a collection of facts, and then to do a systematic inquiry of them. The habits of researchers must be methodical (Darwin, 1958).

At the beginning of the eighteenth century, De Maillet, in his book *Telliamed*, published in 1748, made the first serious attempt to apply the doctrine of evolution to the living world (Huxley, 1901), but it was during

the later part of the century that it had better qualifications with the works of Erasmus Darwin, Goethe, Treviranus and Lamarck. Huxley believed that the theory of evolution was the third great event of their time.

In the middle of the nineteenth century, a great advance in Biology occurred: Schwann published his "cell theory" in 1837, which, according to Huxley (1901: 115) was "a new development of great significance".

Darwin (1887) mentioned observation, collection and then systematic inquiry as part of the process each scientist must follow when studying Life Sciences. The same author, in a previous work (1859: 2), stated that "a fair result can be obtained only by fully stating and balancing the facts and arguments on both sides of each question". One century later, Huxley (1901), sated that natural causes are competent to account for all events.

We have seen that milestones in the development of Life Sciences were not ignored by contemporary scientists. In the next subsection I will try to present how late modern readership and scholars perceived History, the second discipline I will be retrieving my data from.

1.2.2. Writing History in the eighteenth and nineteenth centuries

History was defined in the eighteenth century as an account of some remarkable facts and their causes happened in the world and arranged in the true order in which they actually took place (Ferguson, 1780). In that period,

it was also described as the study of mankind in a mass, of the progress, the fluctuations, the interests and the vices of society, as well as the study of the individual (Godwin, 1797). For Ferguson (1780), what really deserved the name of History was an account of the civil and ecclesiastical transactions of mankind since the beginning of the world. Civil History contained the history of mankind in their relations to one another as well as their behaviour in common life. Therefore, it included an account of states that existed in the world and all men that have been most distinguished for their actions. This is what was called biography. Ecclesiastical History considered the acts of mankind in obedience to the will of the Supreme Being. Thus, in 1877, Harriet Martineau quoted in Hall (2010: 231-232) believed that "All that can be done with contemporary history is to collect and methodise the greatest amount of reliable facts and distinct impressions, to amass sound material for the veritable historian of a future day". In this same century Macaulay (1861: 31) claims that writing History is "to abbreviate despatches, and make extracts form speeches, to intersperse in due proportion epithets of praise and abhorrence, to draw up antithetical characters of great men, setting forth how many contradictory virtues and vices they united, and abounding in *withs* and *withouts"*. For Lord Acton (1906: 7) Modern History was the one "which begins 400 years ago, which is marked off by an evident and intelligible line from the time immediately

preceding, and displays in its course specific and distinctive characteristics of its own."

According to Humboldt (1822), there were two methods to be followed simultaneously in the approach to historical truth. The first method is the exact, impartial, critical investigation of events; the second method is the connection of events explored and the intuitive understanding of them which could not be reached by the first method. In turn, Godwin (1797) stated that the only historians that were worthy of attention and study were the ones who dealt with great genius or the exhibition of bold and masculine virtues. Lyell (1840) believed that an historian should, if possible, have a deep knowledge of all branches of knowledge, such ethics, politics, jurisprudence, the military art or theology whereby any insight into human affairs, or into the moral and intellectual nature of man, could be obtained.

For nineteenth-century writers a historian should possess enough imagination to make his narrative affecting and picturesque, sufficient self-command to abstain from casting his facts in the mould of his hypothesis (Macaulay, 1852); he must not be noticed (Acton, 1906); he must be receptive and reproductive, not active and creative (Humboldt, 1822); and according to Macaulay (1861: 31) historians "must be profound and ingenious reasoned", and they should keep in mind that they write for distant generations.

It is truth one of the main characteristics of History Writing; according to "History" (1797: 590), truth is "the very life and soul of history". Humboldt (1822) believed that it should be exact, impartial and critical. Acton (1906) affirmed that the historian should discern truth from falsehood by investigating the material.

Once I have exposed the various standpoints on the two disciplines under survey supported by both past and modern authors I will delve into the word-class adjective and its functions as well as into the semantic and syntactic classifications of this category and its use during the two centuries of the so-called late Modern period. This will be the object of study of chapter 2.

2. THE ROLE OF ADJECTIVES IN SCIENTIFIC WRITING

Many authors agree that every constituent of a sentence ultimately consists of words. Some of these authors are Huddleston (1984), Quirk *et al* (1985), and Crystal (2006). According to them these words are classified into two broad categories, closed and open or, what is the same, function and content words (Leech and Svartvik, 2013). Closed classes of words comprise those that are finite with a membership that is relatively stable and unchanging in the language. Open classes of words, however, are constantly changing their membership, since old words drop out of the language and new ones are coined or adopted to reflect cultural changes in society. Closed classes include pronouns, determiners, primary auxiliary verbs, modal verbs, prepositions and conjunctions, whereas open classes contain nouns, adjectives, full verbs and adverbs.

As already mentioned in the Introduction, in this work I will focus on the open class *adjective*. Such content words have been modified and undergone several changes throughout history.

2.1. Definition of the class adjective. Adjectives and other word-classes

Several authors such as Bhat (1994), Moskowich (2002), Crystal (2006), Dryer (2007), Dalmolin (2010) or Payne (2010) define adjectives as words used to characterise other words, denoting properties or qualities of such words. Huddleston and Pullum, in their work *The Cambridge Grammar of the English Language* (2002), define the adjective as a syntactically distinct class of words whose most characteristic function is to modify nouns. According to Quirk *et al* (1985), Romaine (1998) and Alexiadou, Haegeman and Savrou (2007), among others, these words called adjectives have three functions. The first function these authors mention is that adjectives can work as the complement of a copula or linking verb (also known as predicative position), illustrated in example [1]. The second function they can perform is that of premodifier of a noun (also called attributive position), as in example [2]. Finally, the third function is that of postmodifier of a noun (postpositive position), as shown in example [3].

[1] *The boy is tall*

[2] *the tall boy*

[3] *people careless in their attitude to money*

Besides, adjectives in predicative position can function as subject complement or object complement (Quirk *et al*, 1985). Adjectives in this position are gradable, that is, adjectives can be premodified by the intensifier *very* or *too* (or take the corresponding suffixes) so that they take comparative and superlative forms. Examples of the characteristics of the predicative position can be observed in the following table, based on Huddleston's (1984) and Quirk et *al*.'s (1985) examples:

Subject complement	*The painting is ugly*
Object complement	*He thought the painting ugly*
Premodified by *very*	*The lecture was very interesting*
Premodified by *too*	*She was too young to enter*
Comparative forms	*happier, more useful*
Superlative forms	*happiest, most useful*

Table 3. Adjectives in predicative position

Other properties of adjectives are the following: they cannot be modified by (other) adjectives and, with some exceptions, they do not take NPs as complements (Huddleston and Pullum, 2002). However, in a more recent work, Payne, Huddleston and Pullum (2010) claim that there is a possibility

for adjectives to function as modifiers of other adjectives as examples in [4] illustrate.

[4] *blind drunk, pretty fine, bloody stupid*

Crystal (2006) adds a morphological characteristic: many adjectives allow for the addition of the suffix *-ly* to form adverbs (as in *slow* → *slowly*).

However, none of these characteristics is unique to adjectives. Nevertheless, words with this combination of properties clearly belong to the adjectival category differentiating themselves from words of other categories. So far we have mentioned characteristics adjectives may have, but Huddleston and Pullum (2002: 528) mention that "adjectives also have negative properties that distinguish them from other categories". Two of these properties, both of a morphological nature, are indicated by Moskowich (2002). She states that adjectives do not have the plural number suffix *-s* (see example [5]) and they do not form the genitive form *´s* (see example [6]):

[5]**slows men*

[6] **early's story*

From a semantic point of view, Payne, Huddleston and Pullum (2010) have stated that adjectives typically denote unidimensional concepts. The word class *adjective* includes words which belong at least to one of the following semantic types: dimension, age, value, colour, physical property, human propensity and speed. The examples they propose to illustrate these types can be seen in Table 4.

Dimension	*big, small, deep*
Age	*old, young, new*
Value	*good, bad*
Colour	*red, white, orange*
Physical Property	*soft, heavy, wet*
Human propensity	*clever, happy*
Speed	*fast, slow*

Table 4. Semantic types of adjectives

As well as by their own properties, adjectives can be defined by contrasting them to other word classes. To this end, we have to consider that there are many theories of categorisation. One of them is the Prototype Theory, developed by Eleanor Rosch and others in the 1970s in cognitive psychology and adapted to linguistics by Lakoff (1982). In this theory the categorization proceeds from peripheral to central instances, being the latter prototypical for a category. According to Rosch and Mervis (1975), the more prototypical the member of a category is, the more attributes it has in common with other members of the category and fewer attributes it has in common with members of other categories. Following this theory, one finds

that there are syntactic and semantic features that are characteristic of other classes but shared by some adjectives as well, or features characteristic of the adjective class but shared by some members of other classes. In line with this theory of Prototypes, in the following pages I will compare adjectives with other lexical word-classes, namely nouns, verbs and adverbs, in order to provide a more definite characterisation of the category under study.

2.1.1. Adjectives and nouns

According to the traditional definition found in Crystal (2006: 206), "a noun is used for naming some person or thing" and other grammars add a separate reference to places. However, this definition excludes many nouns which do not describe places, people or things such as abstract qualities (*beauty*) and actions (*a thump*). According to Huddleston (1984) and Crystal (2006), from a syntactic viewpoint nouns function as heads in the noun phrase (NP) structure and, as such, they can take a different range of dependents from other parts of speech, like the determiners *the* or *some*. They can realise several functions within the NP: subject, object or predicative complement in the clause structure and complement in prepositional or possessive phrases. They can be also inflected for number, singular vs. plural. In morphological terms, Crystal (2006) adds another

characteristic: a noun can be formed by adding a suffix to a verb, an adjective, or another noun. Examples can be seen in Table 5 below:

verb to noun	**adjective to noun**	**noun to noun**
refuse → refusal	*kind → kindness*	*slave → slavery*
survive → survival	*rapid → rapidity*	*king → kingdom*

Table 5. Formation of nouns by suffixation

From a semantic point of view, an adjective modifying a noun denotes a single property, they are 'property words'; while nouns are 'thing words' that suggest a collection of properties. Adjectives emphasise the property they denote and nouns emphasise the individual or object that may possess the property. In addition, adjectives can function as nouns when they denote a property or when they denote a possessor of that property (Huddleston, 1984).

From a syntactic perspective, we must distinguish between adjectives that modify a noun and nouns modifying nouns (Bhat, 1994). Adjectives can be used as nouns when they are used attributively. The distinction between adjectives used as nouns and nouns themselves is that the former can be used as premodifiers and as a subject complement after copulative verbs, whereas the latter can be premodified by an adjective, can be inflected for number, can take determiners and can be inflected for the genitive case (Quirk *et al*, 1985). Adjectives are dependent on the head of

the noun phrase they modify whereas nouns are independent as heads of a noun phrase.

The second distinction, namely the one between adjectives and verbs, will be discussed in the next subsection.

2.1.2. Adjectives and verbs

The traditional definition of verb (Crystal, 2006: 206) is "a word used saying something about some person or thing". As is well known, the word-class verb can be divided into two main categories depending on their function within the verb phrase: the open class of lexical verbs and the closed class of auxiliary verbs (Quirk *et al.* 1985; Crystal, 2006). Lexical or full verbs are those which can function as main verbs and whose meaning can be clearly and independently identified (as in *rain*). Within auxiliary verbs we can distinguish modal and primary auxiliaries, the former "convey a range of judgments about the likelihood of events" (Crystal, 2006: 212). Nine verbs are included in this category: *can*, *could*, *may*, *might*, *will*, *would*, *shall*, *should* and *must*. On the other hand, the forms *be*, *have* and *do* can function both as primary auxiliary verbs and as main verbs depending on the context in which they occur.

From a semantic point of view, adjectives modify the reference or meaning of the head of a noun phrase, while verbs characterise the referents of the arguments, that is, they denote events. Another semantic distinction

between adjectives and verbs is that adjectives denote permanent properties whereas verbs denote changing characteristics. Adjectives are time stable and verbs can be momentary or durative (Bhat, 1994).

Huddleston and Pullum (2002) claim that the problem in differentiating adjectives and verbs arises when we deal with the gerund-participle and past-participle forms of verbs. In order to be able to distinguish them we have to consider two different situations. One occurs when the verb or adjective follows the verb *be*, and the other when it modifies a noun. In the first case, gerund-participle and past-participle forms follow the verb *be* as markers of progressive aspect and passive voice while adjectives follow it as a copula. This can be clearly seen in example [7] provided by Huddleston and Pullum (2002: 540):

[7]:

VERB	**ADJECTVE**
She was sleeping [progressive]	*This was disturbing*
He was killed [passive]	*He was very distressed*
They were seen [passive]	*He was drunk*

Table 6. -ing and -ed forms

These authors suggest four tests to distinguish adjectival forms ending in *-ed*/*-ing* from verbs in this situation. The first test they mention is the possibility of replacing the verb *be* with similar verbs such as *become* or *seem* in complex-intransitive clauses. Some good examples are found in Huddleston and Pullum (2002: 541) and reproduced here from [8a] to [8f]:

[8a] *This seemed disturbing*

[8b] *He became very distressed*

[8c] *He appeared drunk*

[8d] **She seemed sleeping*

[8e] **He became killed*

[8f] **They appeared seen*

The second test they suggest consists in using *too* and *very* before these forms when they premodify a noun. If they admit this kind of premodification they can be considered adjectival forms. Examples [9a] and [9b] are instances of both correct and incorrect constructions (Huddleston and Pullum, 2002: 541):

[9a] **A very sleeping child*

[9b] *some very disturbing news*

Adjectives can be distinguished from verbs by taking into account the syntactic context in which they occur. If the form in question cannot function in attribute position, it maybe a verb [10a, 10b]:

[10a] *the news are astonishing (adj)*

[10b] *the child is sleeping (vb)*

The third factor is meaning; verbs and adjectives are semantically distinct. For instance, the adjective *drunk* in [11a] is semantically distinct from the past participle verb form of [11b] (Huddleston and Pullum, 2002: 541).

[11a] *He was drunk*

[11b] *He had already drunk the milk*

The fourth test they suggest is that "gerund-participles of transitive take objects, whereas no participial adjectives do". This can be observed in example [12] where *mowing* has *the lawn* as an object, therefore, *mowing* is a verb (Huddleston and Pullum, 2002: 541).

[12] *She was mowing the lawn*

Finally, the differences between adjectives and adverbs will be dealt with in sub-section 2.1.3 below.

2.1.3. Adjectives and adverbs

A traditional definition of adverb as "a word used to qualify any part of speech except a noun or pronoun" is offered by Crystal (2006: 206) and

Payne, Huddleston and Pullum (2010). This same authors and Quirk *et al* (1985) mention two main uses of the adverb. The first use is that adverbs can act as an element of the clause structure (as an adverbial); the second use is that they can premodify an adjective, another adverb or a verb as in examples [13] and [14]:.

[13] *They are quite happy/happily married*

[14] *She drives slowly*

From a semantic point of view, and according to Bhat (1994), adverbs denote non-permanent properties in contraposition to adjectives and, as I have mentioned above, adjectives denote permanent properties. Payne, Huddleston and Pullum (2010: 34) make another interesting distinction between adjectives and adverbs. According to them an "adjective is a word that enlarges the meaning and narrows the application of a noun. An adverb is a word that enlarges the meaning and narrows the application of any part of speech except a noun or pronoun".

Quirk *et al* (1985), in turn, differentiate adjectives and adverbs beginning with *a-* explaining that *a*-adjectives refer to temporal states and cannot be predicates after verbs of motion. Likewise, *a*-adverbs denote direction after these verbs. This distinction is shown in [15]:

[15] *She went aboard/abroad/around/away* [adverbs]

*She went *afraid/*alert/*asleep/*awak*e [adjectives]

Another difference between adjectives and adverbs is syntactic. According to Bhat (1994), the former, being part of a noun phrase, are closely attached to head nouns; and the latter are free in the clause, since clauses or sentences are not unified entities. Payne, Huddleston and Pullum (2010) affirm that any item belonging to the adjective distributional core (and not belonging by other distributional criteria to another category) can appear after a determiner and before a noun; and any item belonging to the adverb distributional core (and not belonging by other distributional criteria to another category) can appear after a subject and before a verb.

The same authors (2010: 51) mention that "while adverb modifiers of nouns are thus restricted to post-head position, the situation with adjectives is less straightforward". However, in the simplest cases, they are restricted to pre-head position, see [16].

[16] *an international shortage*, vs. **a shortage international*

After this characterisation of the word-class by contrasting its members with prototypical members of other word-classes, the four different functions of

adjectives, that is, attributive, predicative, postpositive and as heads of noun phrases, are dealt in section 2.2. below.

2.2. Functions of adjectives

As we have already seen and is well known (Quirk *et al*, 1985; Greenbaum, 1996; Aarts, 1997; Alexiadou, 2001; Moskowich, 2002) adjectives can be used predicatively, that is, after the copulative verb *to be*, and can be used attributively, preceding the noun. A very basic example of a predicative adjective can be seen in [17], and an example of an attributive adjective in [18]:

[17] *The girl is <u>beautiful</u>*

[18] *The <u>beautiful</u> girl*

Some adjectives can be used in both functions (predicative and attributive) but others can only be used either predicatively or attributively (Aarts and Aarts, 1982; Greenbaum, 1996; Markus, 1997; Aarts, 1997). Among the adjectives that can work both as predicative and attributive adjectives we find some such as *old, true* or *perfect* in Table 7 below:

Attributive	Predicative
the old castle	*that castle is old*
the true story	*the story is true*
the perfect day	*the day is perfect*

Table 7. Attributive and predicative position

Besides, attributive adjectives can also occur in a postpositive position, that is to say, following the head of the noun phrase.

On other occasions, adjectives can also function as heads of noun phrases, often preceded also by some kind of determiner (as in *the poor*) and may be considered as nouns by some analyses based on purely syntactic criteria. All these functions and positions of the adjective will be studied in some depth in the following subsections.

2.2.1. Attributive function

We have already seen that many authors have classified attributive adjectives in different ways attending both to syntactic and semantic criteria.

Syntactically speaking, attributive adjectives are the ones which premodify the head of a noun phrase (Aarts and Aarts, 1982; Quirk *et al*, 1985; Greenbaum, 1996; Biber, 1999), and in most cases modify common nouns (Biber, 1999). In their descriptive grammar, Thomson and Martinet (1986), demonstrative, distributive, quantitative, interrogative and possessive adjectives are restricted to an attributive position. Greenbaum

(1996) classified some attributive adjectives as intensifiers [19a], restrictive [19b], related to adverbials [19c], or related to nouns [19d].

[19a] *utter*

[19b] *only*

[19c] *old 'of old'*

[19d] *criminal 'dealing with crime'*

Bolinger (1967) also includes compounds ending in *-ing* and *-ed* [20a, 20b] in this group:

[20a] *the good-looking girl*

[20b] *the one-eyed man*

He mentions some shortcomings of *be* predications that can be further divided into four groups according to their syntactic origin:

1. adverbial predications from which the adverb is recovered as an adjective as in [21a]):

   [21a] *daily*

2. a few relics of ancient perfect tenses with *be* as in [21b]:

[21b] *The Indians are (have) vanished → The vanished Indians*

3. the passive voice as in [21c]:

[21c] *stolen jewels*

4. predications from which the verb is recovered as well as its complements as in [21d]:

[21d] *The man walks slow → a slow-walking man, the woman travels widely → a widely-travelled woman*

From a semantic perspective, attributive adjectives restrict the reference of the noun they accompany (Quirk *et al*, 1985) and they tend to denote fairly permanent properties according to Bhat (1994) and Bolinger (1967). In addition, for Rind and Tillinghast (2008: 83) "what makes an adjective attributive is the fact that it cannot be used to make a logically complete predication unless it modifies some substantive expression". In turn, Borer and Roy (2010) believe that most adjectival expressions in nominal contexts are attributive adjectives.

Again mixing semantic and syntactic criteria, Fries (1986) believes that adjectives denoting identity, amount, and attitude of the speaker belong to the group of attributive adjectives, the same as those referring to location in space and time in relation to the speaker (Bolinger, 1967). Valois (2006) states that manner and thematic adjectives belong here too. Fleisher (2011) mentions that adjectives describing mental state or attribute require that the nouns they modify denote sentient (most likely human) beings.

Another semantic classification of attributive adjectives is the one proposed by Quirk *et al* (1985) into inherent and noninherent (see subsection 2.3.3 below). Inherent adjectives are the ones which characterise the referent of the noun directly as opposed to noninherent adjectives. These authors also divide semantically attributive-only adjectives into intensifying and restrictive adjectives. There are three kinds of intensifying adjectives: emphasizers, amplifiers and downtoners, due to the fact that they do not characterize the referent of the noun directly. Some examples of emphasizers can be seen in [22a], [22b] shows examples of amplifiers, whereas downtoners are represented in [223c].

[22a] *a <u>true</u> scholar* *<u>plain</u> nonsense*

a <u>certain</u> winner a <u>sure</u> sign

[22b] *a <u>complete</u> fool* *a <u>firm</u> friend*

[22c] *a <u>slight</u> effort* *<u>feeble</u> joke*

In relation to restrictive adjectives they claim that "restrictive adjectives restrict the reference of the noun exclusively, particularly, or chiefly" (Quirk *et al*, 1985:430) Some examples of restrictive adjectives can be seen in [23]:

[23] *a certain person* *the chief excuse*
the principal objections *the exact answer*
the same student *the sole argument*
the only occasion *the specific point*
a particular child *the very man*

Huddleston and Pullum (2002) claim that there is a relation between semantics and syntax, since there are many attributive adjectives that have a different meaning when they are used predicatively or attributively. A good example is *late*. Compare the meaning of *late* when used attributively [24a] and predicatively [24b]:

[24a] *the late queen*
[24b] *She is late*

When *late* is in an attributive position it means "recently deceased", while in a predicative position it means "behind schedule". Other adjectives with the same characteristics are *old*, *hard* or *complete*.

The second possible function of the adjective, that is, the predicative function will be dealt with in the next subsection.

2.2.2. Predicative function

According to authors such as Quirk *et al* (1985), Biber (1999) and Payne, Huddleston and Pullum (2010), adjectives are predicative when they function as a subject or as an object complement. Biber (1999: 515) defines predicative adjectives functioning as subject complement as "complement of a copular verb, characterising the nominal expression in subject position" as illustrated in example [25]:

[25] *She seems quite nice really*.

Predicative adjectives functioning as object complement are defined as adjectives following a "direct object, making a predication about that noun phrase" as in [26]:

[26] *I said you've got all your priorities wrong*.

Bolinger (1967) stated that they denote transient properties of the noun they modify. Some years later, Greenbaum (1996: 134) stated that these adjectives "are part of the predicated, linked to the subject by a copular verb such as *be* or *seen*". For Bhat (1994) and Aarts (1997), predicative adjectives characterise the referent of other constituents and, Valois (2006: 62) believes that predicative adjectives have the "capacity to appear with a copula (null or not) or with a verb in a reduced construction". This author further describes predicative adjectives either as intersective or non-intersective. On the one hand, intersective adjectives "denote the set of objects or individuals that have the property denoted by the adjective and noun" (Valois, 2006: 62) as in example [27]. On the other hand, non-intersective adjectives "restrict the reference denoted by the set of nouns to only those which are adjectives (*careful*) or determine the set of nouns being characterised." (Valois, 2006: 62).

[27] *The round table*

As we have seen in previous pages, there were some adjectives that could be used in an attributive function only. Similarly, there are others that are predicative-only. These adjectives share some characteristics already discussed by certain authors. Quirk *et al* (1985) say that those adjectives that tend to refer to a possibly temporary condition rather than to characterise the

word they modify are restricted to a predicative use as well as those adjectives referring to the health of an animate being as in example [28]:

[28] *Susan was ill*

Bolinger (1967) also mentions some such adjectives restricted to a predicative function. Among them he mentions adjectives with complements of their own, such as adjectives referring to temporal states of health, sensation, mind or spirits (see example [29]), adjectives which name a too ephemeral quality to characterise anything (see [30]) (Bhat, 1994) and temporal modifiers (Alexiadou, 2001).

[29] *How are you? I'm great, dizzy, hot.*

[30] *The man is ready vs. *The ready man*

According to Greenbaum (1996), many predicative adjectives have a meaning related to that of certain verbs [31a], [31b], [31c].

[31a] *afraid of 'fear'*

[31b] *fond of 'like'*

[31c] *aware that 'know that'*

In the following subsection I will discuss postpositive adjectives within the noun phrase.

2.2.3. Postpositive function

The third use of adjectives is what is commonly known as postpositive use. Huddleston and Pullum (2002), as well as Biber (1999), define postpositive adjectives as adjectives that function as post-head internal modifiers in NP structure. They can immediately follow the noun or pronoun they modify as in [32]:

[32] *something useful*

Huddleston (1984) and Huddleston and Pullum (2002) believe that these types of adjectives are "much less frequent than attributive and predicative ones: adjectives are admissible in this position only under severe syntactic constraints" (Huddleston and Pullum 2002: 529). Some time earlier Huddleston (1984: 261) had already mentioned that "only the post-head position is available when the head is realised by an 'indefinite pronoun'".

According to Markus (1997) the historical reason for postpositive adjectives in English is the strong influence of Latin and French in the field of administration. He believes that postpositive adjectives tend to have a "distinctly rhematic weight" (Markus, 1997: 493) and that adjectives with

complements are frequently postposed due to the fact that they can be interpreted as "having a relative amount of rhematic or communicative weight" (Markus, 1997: 493).

In this same vein, Quirk *et al* (1985) talk about expressions and types of adjectives used in postpositive position, for example in several institutionalised expressions (the majority in official designations) (Romaine, 1998) or adjectives ending in *-able* and *-ible* when the noun that the adjective modifies is modified by another adjective in the superlative degree. The examples they provide (Quirk *et al*, 1985: 418) are [33] and [34] below.

[33]*The best use possible*

[34] *The greatest insult imaginable*

Romaine (1998) also mentions that when the head is a compound indefinite pronoun [35], or has a complement of its own [36] the adjective appears in a postpositive position (also Smith, 1961; Quirk *et al*, 1985; Markus, 1997).

[35] *anyone intelligent*

[36] *the boys easiest to teach*

Quirk *et al* (1985) mention several adjectives that are common in a postpositive use: *absent, present, concerned, involved* when they designate temporary attributes and with the set phrase *pure and simple* [37a, 37b]. Huddleston and Pullum (2002) also list some adjectives that are restricted to postpositive position, and they give some examples I reproduce as [38a, 38b, 38c].

[37a] *answer pure and simple*

[37b] *truth pure and simple*

[38a] *restaurants aplenty*

[38b] *flowers galore*

[38c] *the city proper*[2]

Another possible function of adjectives is that of heads of Noun Phrases and this will be the topic of the next subsection.

2.2.4. Adjectives as heads of a noun phrase

Adjectives can function as heads of noun phrases and when they fulfil this function they can be subject of a sentence [39], complement, object, and prepositional complement [40]. When adjectives have this

[2] "*Proper*" here means "in the strict sense of the term", and is distinct from the attributive-only sense of *a proper job*".

function the emphasis is on "denoting a property (or its possessor) as an entity by itself" (Bhat, 1994: 98). On these occasions, they do not take number inflection or genitive case inflection since from a morphological point of view they are still adjectives. They usually indicate generic meaning, and they usually refer to well-established classes of people. (Quirk *et al*, 1985; Greenbaum, 1996)

[39] *The old need a lot of care*

[40] *He left for good*

Quirk *et al* (1985) make a division into three types of adjectives as heads of noun phrases. The three types are the following:

1. "*The innocent*". These types of adjectives denote classes, categories or types of people with plural and generic reference. These adjectives can premodify personal nouns, such as [41]; and can be premodified [42] or postmodified [43]. This kind of adjectives can also take inflected comparison [44].

[41] *the young people*

[42] *The extremely old need help*

[43] *The young in spirit enjoy life*

[44] *the younger*

2. "*The Dutch*". This type of adjectives denote nationalities and normally have generic reference. They take plural concord and they cannot be modified by adverbs [45] but can be modified by adjectives [46].

[45] **The very Spanish*

[46] *the old Spanish*

3. "*The mystical*". These adjectives have an abstract reference; they take singular concord, they can be modified by adverbs [47] and are restricted to fixed expressions [48].

[47] *the extremely exotic*

[48] *the exotic, the unreal*

Within this kind of adjectives, Greenbaum (1996: 136) adds a semantic shade, further distinguishing those which have plural reference from those which have singular reference. Those with plural reference "refer to animate beings, generally human, and they have generic reference". Adjectives with singular reference normally refer to abstractions.

As I have done in section 2.2. I will propose to follow a new classification of adjectives based on a semantic criterion. This will be explored in the following section.

2.3. Semantic classification of adjectives

Among all the possible semantic classifications of adjectives presented so far, for this study I have chosen two which may be said to complement each other. On the one hand, I have decided to follow Quirk *et al*'s (1985: 434-436) classical taxonomy which establishes a division in stative vs. dynamic, gradable vs. non-gradable and inherent vs. non-inherent. Besides, and as has been said elsewhere in this work, I have also resorted to the categorisation of attributive adjectives proposed by Huddleston and Pullum (2002) since it seems to complement and on occasions refine this first one.

2.3.1. Stative vs. dynamic

Lakoff (1966) defines stativity an inherent property of adjectives. Hale and Keyser (1999) add that stativity must be indicated in the semantic composition of meaningful elements. Although the opposition between stative and non-stative or dynamic is mainly a semantic one, it has some syntactic implications. Semantically speaking, stative adjectives denote a

state or condition which could be considered to be permanent (Quirk *et al*, 1985) as in example [49] and, as a consequence, these adjectives have the semantic property of being non-active (Lakoff, 1966). Dynamic adjectives, on the contrary, denote qualities that are thought to be under the control of the possessor (as in example [50]). This is the reason why they can be temporally restricted (Quirk *et al*, 1985). Therefore, dynamic adjectives can be said to have the semantic property of activity.

[49] *big, red, small*

[50] *brave*

As regards the syntactic implications I mentioned above, the syntactic differences between stative and dynamic adjectives can be seen in the fact that stative adjectives cannot be used with progressive, imperative or causative constructions. Contrariwise, dynamic adjectives can be accompanied by such structures (Lakoff, 1966; Quirk *et al*, 1985). An example of each can be seen in the following table:

	STATIVE	**DYNAMIC**
Progressive form	**She's being tall*	*She's being good*
Imperative	**Be tall*	*Be good*
Causative constructions	**I persuaded her to be tall*	*I persuaded her to be good*

Table 8. Stative and dynamic adjectives

Although, in principle, adjectives are characteristically stative, many of them can also have a dynamic use. Some examples of dynamic adjectives are shown in [51]:

[51] *careful, clever, generous, helpful, naughty, brave*

The Cambridge Dictionary Online defines these words as follows: *careful* as "giving a lot of attention to what you are doing so that you do not have an accident, make a mistake, or damage something"; *clever* as "having or showing the ability to learn and understand things quickly and easily". *Generous* has been define as "willing to give money, help, kindness, etc., especially more than is usual or expected"; and *helpful* as "willing to help, or useful". According to this dictionary "when children are naughty, or their behaviour is naughty, they behave badly or do not do what they are told to do". Finally, *brave* is defined as "showing no fear of dangerous or difficult things". Paying attention to the definitions given, all these adjectives imply an action, which is one of the characteristics of dynamic adjectives (Quirk et al, 1985). All these adjectives are dynamic because all of them can be used in the imperative form (*Be careful!*, *Be clever!*, *Be generous!*, *Be helpful!*, *Don't be naughty!*, *Be brave!*), they can be used in a progressive form (*She's being careful*, *You're being clever in this situation*, *He's not being*

generous now, I'm being very helpful, The boy is being naughty, The whole army is being brave), they can be used in causative constructions (*I persuaded her to be careful, I persuaded her to be clever, I persuaded her to be generous, I persuaded her to be helpful, I persuaded her not to be naughty, I persuaded her to be brave*); and, finally, all of them denote qualities that are thought to be subject to control by the possessor and denote an attribute which may not always be in evidence.

The next subsection deals with the second semantic classification proposed by Quirk *et al* (1985), that is, gradability.

2.3.2. Gradable vs. non-gradable

The semantic feature of gradability can be manifested by means of comparison or modification by intensifiers (see [52]) as posed by Quirk *et al* (1985), Kennedy (1999b), Biber (1999) and Huddleston and Pullum (2002):

[52] *short* → *short<u>er</u>* → *short<u>est</u>*

comfortable → *<u>more</u> comfortable* → *<u>most</u> comfortable*

To these, Kennedy (2007) adds two more ways of testing and measuring gradability: the use of sufficiency morphemes (*too*, *enough*, *so*) and the possibility to be accompanied by the question word *how*. Similarly, gradable adjectives can be preceded by words such as *very*, *extremely*, *less* and the like as illustrated in example [53] below

[54] *very tall, extremely dangerous, less easy*

According to Huddleston (1984), the possibility of adding a degree modifier depends on the meaning of the adjective itself. From a semantic point of view, a gradable adjective denotes a scalar property that can be possessed in varying degrees and this is the reason why adjectives can take degree modifiers (also Culpeper *et al*, 2009). Kennedy (1999a: 3) also makes a distinction between gradable and non-gradable adjectives. He claims that "the domains of gradable adjectives are partially ordered according to some property that permits grading". Some years later this same author (2007: 5) stated that degree morphemes serve two different semantic functions. The first he mentions is one in which they introduce an individual argument for the measure function denoted by the adjective. According to him, "measure functions are converted into properties of individuals by degree morphology". The second semantic function is the one in which these degree morphemes "impose some requirement on the degree derived by applying the adjective to its argument, typically by relating it to another degree".

Following Quirk *et al* (1985), we can say that all dynamic and most stative adjectives are gradable, although there are some exceptions. These

exceptions are adjectives denoting material, nationality and few others (Aarts, 1997) as shown in [54].

[54] *wooden → *a very wooden floor, Spanish → *a very Spanish book*

Biber (1999) and Breban (2010) point out that classifying adjectives are normally non-gradable. An example can be seen in [55]:

[55] *dental → *more dental, *dentalest, *very dental*

However, gradability is a feature not exclusive of adjectives in English but can be found in other word-classes such as adverbs (Moskowich, 2002; Moskowich and Crespo, 2002). The sequence in [56] is a good example:

[56] *softly ~ extremely softly*

This fact proves that gradability cannot be used as a determining factor for the characterization of adjectives.

The next semantic distinction, that is, the binary opposition inherent and non-inherent is discussed in subsection 2.3.3 below.

2.3.3. Inherent vs. non-inherent

The *Cambridge Dictionary Online* defines inherent as "existing as a natural or basic part of something".

Inherent adjectives characterise the referent of the noun directly and denote an attribute or quality of the noun. The attribute they denote is inherent to the noun which they modify as in [57]. In the same example we can appreciate that inherent adjectives can be used predicatively.

[57] *an old man ~ a man who is old*

something understood ~ something which is understood

Contrariwise, non-inherent adjectives refer less directly to an attribute of the noun than inherent adjectives and in this case they cannot be used predicatively. Some examples of both inherent and non-inherent adjectives can be seen in Table 9:

INHERENT	**NON-INHERENT**
distant hills	*distant relatives*
a complete chapter	*a complete idiot*
a heavy burden	*a heavy smoker*
an old man	*an old friend*

Table 9. Inherent and non-inherent adjectives

In the example above *an old friend*, *old* characterises the friendship, not the referent of the noun *friend*; hence it is non-inherent. In *an old man*, *old* characterises the referent of man and, therefore, it is inherent.

So far I have dealt with the semantic classification of adjectives proposed by Quirk *et al* (1985). From here onwards, I will focus on the finer-grained classification posited some years later by Huddleston and Pullum (2002).

2.3.4. Huddleston and Pullum's categorisation

Other authors that have also tried to classify attributive adjectives from a semantic perspective are Huddleston and Pullum (see Introduction), who in their work *The Cambridge Grammar of the English Language* (2002) proposed eight different categories of attributive adjectives which they illustrated with several examples. The first category they mention is "Degree and Quantifying attributives" which refers to the degree to which the property expressed in the head nominal applies in a particular case [58a, 58b, 58c]:

[58a] *a <u>complete</u> fool*

[58b] *a <u>definite</u> advantage*

[58c] *the <u>extreme</u> end*

The second category is that of "Temporal and Locational attributives". The adjectives in this category express the relative time or location in space which characterise the head as in examples [59a, 59b, 59c] below:

[59a] *his current girlfriend*

[59b] *the right eye*

[59c] *the southern states*

The third category is that of "Associative attributes", where the property expressed by the adjective applies to some entity associated with the head nominal. This can be observed in examples [60a, 60b, 60c]:

[60a] *clerical duties*

[60b] *criminal law*

[60c] *foreign affairs*

In the fourth category, "Process-oriented attributives", the property expressed by the adjective applies not to the denotation of the nominal but to an associated process and the adjective describes the degree or manner of this process. Examples [61a] to [61c] illustrate this point:

[61a] *a big eater*

[61b] *a <u>fast</u> worker*

[61c] *a <u>firm</u> believer*

The fifth category is labelled "Modal attributives". Adjectives within this group express a modal qualification of the noun they accompany [62a, 62b, 62c]:

[62a] *the <u>actual</u> cause*

[62b] *an <u>apparent</u> discrepancy*

[62c] *a <u>certain</u> winner*

"Particularising attributives" form category number six in Huddleston and Pullum's classification and serve to pick out a specific member or group of members of the set denoted by the head as in [63a] and [63b]:

[63a] *a <u>certain</u> house*

[63b] *a <u>particular</u> area*

The seventh category is that of "Expressive attributives". Members in this category convey some kind of evaluative attitude or emotion. In [64a] to [64c] this use can be attested:

[64a] *my <u>dear</u> mother*

[64b] *her <u>poor</u> father*

[64c] *the <u>wreathed</u> car*

Finally, in "Transferred attributives", the eighth category, the adjective does not apply literally to the head nominal (see examples [65a, 65b]):

[65a] *a <u>drunken</u> brawl*

[65b] *a <u>quiet</u> cup of tea*

Semantic classifications like the ones already explained are not the only ones in the realm of the word class *adjective*. The literature on adjectives also offers us another possible classification in relation to their syntactic properties which will be discussed in the next section,

2.4. Syntactic classification of adjectives

This section deals with the two possible positions of attributive adjectives within the noun phrase, that is, prenominal and postnominal.

2.4.1. Prenominal adjectives

According to Bolinger (1967), prenominal adjectives attribute a permanent, enduring or characteristic property of the entity denoted by the

noun (see [66]); and, according to Sadler and Arnold (1994), in order to appear prenominally adjectives must be able to denote some plausible characteristic property of the noun they modify.

[66] *navigable river*

Authors such as Svenonius (1994) point out that those adjectives in prenominal position are optional and iterable. He explains this by stating that the determiner (D) selects the noun phrase (NP), and that NP can appear without any adjective as in [67a], with one adjective [67b], or with more than one adjective [67c].

[67a] *the house*

[67b] *the big house*

[67c] *the big blue house*

Sadler and Arnold (1994) also state that prenominal adjectival phrases are subjected to some severe constraints. One of them is that adjectives with complements cannot be used prenominally as illustrated in [68].

[68] **a grateful for the present child*

Another constraint is that the comparative form may appear prenominally because the *than* complement expressing the comparison extraposes round the noun [69].

[69] **a <u>better than mine</u> book*

Svenonius (1994: 12) mentions that "the higher adjective, to the left, modifies the reference of the entire constituent it combines", as can be seen in examples [70a] and [70b].

[70a] *a possible rich Republican ≠ a rich possible Republican*

[70b] *a former happy camper ≠ a happy former camper*

In the same vein, the noun phrase in [71a] refers to a chicken that was first frozen and then chopped while the noun phrase in [71b] refers to a chicken that was first chopped and then frozen.

[71a] *chopped frozen chicken*

[71b] *frozen chopped chicken*

Again using semantic criteria for syntactic description, Cinque (2010) argues that the prenominal position in English is systematically ambiguous

between the two values of a number of semantic distinctions. The first ambiguity he mentions is that between an intersective and nonintersective reading. Consider example [72] where *beautiful* can refer to the set of beautiful entities intersecting with the set of dancers, where the adjective is interpreted as applying to the referent of dancer ("she is beautiful as a person, and she is a dancer"), or it can modify the intension of the noun dancer, where it is interpreted as "adverbial" rather than intersective ("she dances beautifully").

[72] *Olga is a beautiful dancer*

This author also states that prenominal adjectives are ambiguously interpreted as restrictive (see examples [73a], [73b]). *Unsuitable* [73a] is interpreted as ambiguous in [73a] whereas it is interpreted as non-restrictive in [73b].

[73a] *All of his <u>unsuitable</u> acts were condemned*

[73b] *'All his acts were condemned; they were <u>unsuitable</u>'*

In addition, he mentions that in prenominal position a superlative adjective is also ambiguous between an absolute and a comparative reading as in

[74a, 74b and 74c], being [74a] ambiguous, [74b] absolute, and [74c] comparative:

[74a] *Who climbed the highest snowy mountain?*

[74b] '*Who climbed Mt. Everest?*'

[74c] '*Who climbed a snowy mountain higher than those that others climbed?*'

Another (in this case, morphological) restriction to the positions of attributive adjectives is mentioned by Markus (1997) when he states that adjectives beginning with *a-* cannot appear in a prenominal position as in [75]:

[75] **the asleep children*

He adds that the prenominal position of the adjective is possible when forms denoting time or place are used as identifiers of a specific referent within a pragmatic pattern instead of having their basic temporal or spatial function. In *the upstairs neighbour*, the neighbour is seen as opposed to another neighbour who is downstairs or somewhere else in the same building. However, if the neighbour is localized in a concrete event (*my neighbour upstairs was bashing on my ceiling*), the postposition of *upstairs* seems

more adequate, since it suggests that the neighbour is actually present. As a consequence of this situational concreteness, there is a difference in acceptability between [76a] and [76b].

[76a] *my upstairs neighbour is having a party downstairs*

[76b] **my neighbour upstairs is having a party downstairs*

The following subsections deal with the second function that affects adjectives: the postnominal position.

2.4.2. Postnominal adjectives

In contraposition to prenominal adjectives, the postnominal adjective refers to a transient, temporary and certainly not typical property of the denotation of the noun. This type of adjectives modifies the referent as in example [77] and can immediately follow the noun or pronoun they modify (Bolinger, 1967).

[77] *rivers navigable*

They are often seen as a reduced relative clause (Svenonius, 1994) as example [76] illustrates:

[76] *rivers navigable → rivers that are navigable*

According to Cinque (2010), the evidence for this conclusion comes from the fact that postnominal adjectives behave invariably like the corresponding predicative adjective inside a restrictive relative clause. Example [79] below can be useful to illustrate this point: the pronominal position of *possible* is ambiguous since both a modal meaning (hardly equivalent to 'potential') and the meaning derived from a reduced relative clause (hardly paraphrasable as 'every candidate that was possible for her to interview') can be interpreted.

[79] *Mary interviewed every possible candidate*

Quirk *et al* (1985) believe that postnominal adjectives may be restrictive or non-restrictive. In [80a] there is a generic and indefinite noun head. On the contrary, in [80b], the noun head is specific and definite.

[80a] *soldiers normally timid don't fight well* ['soldiers who are...']

[80b] *the soldier, normally timid, fought bravely* ['the soldier, who was...']

As mentioned in the previous subsection, Cinque (2010: 6-7) argues that the prenominal position is systematically ambiguous between a reading in which the adjective denotes a permanent property, and a reading in which it denotes a temporary one; but it is more common to find adjectives in postnominal position that denote a temporary property. He exemplifies the ambiguity in prenominal adjectives in [81]. Example [82], however, shows the lack of ambiguity in postnominal adjectives.

[81a] *The **visible** stars include Aldebaran and Sirius* (ambiguous)

[81b] *'The stars that are generally visible include Aldebaran and Sirius'* (permanent property)

[81c] *'The stars happen to be visible now include Aldebaran and Sirius'* (temporary property)

[82a] *The (only) stars **visible** are Aldebaran and Sirius* (unambiguous)

[82b] # *'The (only) stars that are visible are Aldebaran and Sirius'* (permanent property)

[82c] *'The (only) stars that happen to be visible now are Aldebaran and Sirius'* (temporary property)

This means that whereas the adjective in pronominal position can have either a restrictive or a non-restrictive meaning, in postnominal position

there is just the possibility of interpreting it as restrictive. To make this point clear, I have used examples [83a] to [83c]. In the first place, example [83a] represents an unambiguous postnominal adjective. Second, [83b] illustrates a case of non-restrictive adjective, and, finally, [83c] a restrictive one.

[83a] *Every word <u>unsuitable</u> was deleted*

[83b] *'*Every word was deleted; they were unsuitable*'

[83c] '*Every word that was unsuitable was deleted*'

Svenonius (1994) suggests that, with the exception of adjectives following indefinite pronouns, the postnominal position is restricted to stage-level predicates that can be seen in reduced relatives. There is one apparent case of adjectives as postmodifiers that does not fall into this category, that of complex pronouns. Examples [84a], [84b] and [84c] contain such pronouns:

[84a] *something wild*

[84b] *no place quiet*

[84c] *everyone crazy*

This type of pronouns does not show the stage-level restriction, and they are strictly non-iterable, as can be seen in [85a], although other modifiers may freely be iterated (as in [85b]):

[85a] **anybody enraged hungry*

[85b] *anybody on the porch with a knife*

Abney (1987) proposed that the complex pronouns mentioned above involve head movement of the noun to the determiner. For instance, example [84a] above derives from *some wild thing*. A possible explanation for this change could be that with the removal of the noun *thing* from the original noun phrase *some wild thing*, this disappears. A single adjective phrase adjoined to the indefinite pronoun could be reanalysed as a complement to the determiner.

Then, as I have mentioned in the previous subsection, the postnominal position of adjectives is mainly caused by the existence of complements or adjuncts accompanying them (Quirk *et al*, 1985; Sadler and Arnold, 1994) as we can see in example [86]. In addition, this can be the obligatory position of those adjectives modifying indefinite proforms (Smith, 1961) as in [87]:

[86] *a suitable actor/*a suitable for the part actor*

[87] *Did you notice something odd, *I need stable someone for this experiment*

Apart from this, certain kinds of adjectives cannot appear postnominally. These are the ones which cannot be used in predicative position (Sadler and Arnold, 1994). In [88a], [88b] and [88c] we can find examples of this point:

[88a] *utter folly*

[88b] **folly utter*

[88c] **This folly is utter*

Adjectives ending in *–able* and *–ible* can be postnominal if the head noun is modified by another adjective in the superlative degree, by *only* or by the general ordinals *last* and *next* [89a], [89b] (Quirk *et al* 1985).

[89a] *the best use possible*

[89b] *the only actor suitable*

On top of that, we have already said that Quirk *et al* (1985) explain that the adjective is postnominal in several institutionalised expressions, mostly in official designations as in example [90].

[90] *the president elect*

Markus (1997), in turn, added that postnominal adjectives seem to be due to the historical survival of some French or Latin phrases or to those that can be reduced to a "neoclassical style" as in [91].

[91] *God Almighty*

Having revised the semantic and syntactic classifications of adjectives that will be later used in the analysis of data it seems in order to introduce some considerations on the lexical category *adjective* in the eighteenth and nineteenth centuries since I will consider the position of adjectives within the noun phrase precisely in those centuries.

2.5. Adjectives in the eighteenth and nineteenth centuries

The eighteenth and nineteenth centuries belong to the period of the English language called by some authors Late Modern English (lModE) (Denison, 1998; Van Ostade; 2009; Aarts, López-Couso & Méndez Naya, 2011), and which lasts from 1700 to 1900. According to Aarts, López-Couso and Méndez Naya (2011), the developments which took place in the Late Modern English period are confined to changes relating to the regulation of variants introduced in previous periods.

In what refers to adjectives, an increase in the use of modifiers was attested by some scholars (Bäckund, 2006). Such an increase could be due to three different causes:

- First, there was a development from a "classical" prose style to a more elaborated "romantic" style.
- Second, this increase could be a reflection of the upper-class speech.
- Third, there was an increase in the frequency of the nouns used.

From a semantic perspective, Bäckund (2006) claims that in the nineteenth century the group of more frequently used adjectives belonged mainly to two categories: those of Age and Mental State. In contrast, the less frequent group included the categories of Ability, Nationality and Physical State. Also very common was the use of clusters of two modifiers.

Syntactically speaking, there seemed to be a trend from postmodification [92] to premodification [93] in the period under study (Lass, 1998). Adamson and González-Díaz (2009) also insist on this idea of flexibility in word order. Hence, the acceptance of pre- and postposition:

[92] *the girl tall*

[93] *the tall girl*

Also following Burchfield (1985: 48), when the adjective was in predicative position it could be used after many verbs other than *to be*. He exemplifies this in [94a, 94b] below. In this period adjectives in a postmodifying position such as in [95] were found rather more frequently than today (Rissanen, 1999: 208; and Smith, J, 1999).

> [94a] *The problem seemed insoluble* (where the subject is modified by the adjective)
>
> [94b] *He thought the problem insoluble* (where the object is modified by the adjective)
>
> [95] *Which they call a tongue vulgare and barbarous*

Lass (1998) thought that during the eighteenth century, in phrases where the adjective functions as head of a noun phrase, the pre- and postmodifying elements are seldom connected with pronominal heads, and two determiners (for instance possessive and demonstrative pronouns) can be combined less freely. According to Romaine (1998), noun phrases with a common noun as head allowed or demanded more complex modification [96], and various categories could fill the functional slots of [96], as in [97]. This structure is valid for the whole lModE period, having significant changes limited to

greater freedom for the previous postmodifiers to be used in premodification.

[96] Determiner(s) + Modifier(s) + Head + Postmodifier(s)

[97] both the other silly large love letters in the kitchen

Adjectives as heads of noun phrases had been almost exclusively used with reference to plural generics as in [98]; although some referred to singular abstractions as in [99a] or to singular individuals as in [99b] (Lass, 1998; Romaine, 1998):

[98a] *the poor (= "poor people")*

[98b] *the French (= French people")*

[99a] *the unknown (= "that which is unknown")*

[99b] *the deceased (= "the dead people")*

From a morphological point of view, it was also during this period that the adjective lost its inflections, except for the comparative and superlative endings (*-er*/*-est*) (Millward, 1996). Already in the Early Modern English (eModE) period there were, as in Present-day English, two ways of making comparison, either using inflectional endings (*-er*/*-est*) or using a periphrastic method. Blake (1996) stated that the rule for the use of the

inflectional endings *-er*/*-est* with monosyllabic and the periphrastic forms *more*/*most* with polysyllabic adjectives was increasingly applied during the eighteenth century Barber (1976) and Blake (1996) believed that there was free variation when using both methods. Both these authors and Strang (1970) mentioned that most grammarians generally disagreed with these alternative views, coming under corrective treatment in the eighteenth century. According to Barber (1976) and Kytö and Romaine (2006), both methods coexisted [100].

[100] *In Julius Caesar: This was the most vnkindest cut of all*

However, Leech and Culpeper (in Kytö and Romaine, 2006) found that the predicative function, rather than the attributive one, favoured the analytical comparative form. Most comparatives in attributive position were inflectional and the ones in predicative position were periphrastic (Kytö and Romaine, 2006).

In chapter 3 I will present the material which I have used for the present study as well as the methodological tools employed to carry out this task.

3. MATERIAL AND METHOD

In this chapter I will explain all the material used and the methodology applied to this study. The chapter will be divided into two sections, the first one will briefly describe the corpus used in this work and the second section will deal with the different tools, software used and steps taken when analysing the data.

3.1. Corpus material

This study is based on the analysis of texts taken from the *Coruña Corpus of English Scientific Writing* (henceforth, *CC*). They belong to two subcorpora devoted to two different disciplines. On the one hand, I have resorted to samples from *CELiST* (*Corpus of English Life Sciences Texts*) and, on the other, to *CHET* (*Corpus of History English Texts). The Coruña*

Corpus: A Collection of Samples for the Historical Study of English Scientific Writing is a project whose aim is to create a corpus that can be used for the diachronic study of scientific discourse at most linguistic levels and thus contribute to the study of the historical development of English for specific purposes. The compilation criteria of the *CC* were based on some external parameters to ensure fruitful linguistic analyses (Crespo and Moskowich, 2009; Crespo, 2012; Moskowich, 2012). The texts sampled were published between 1700 and 1900 and first editions were used for compilation whenever available. Only one text per author was selected in order to avoid linguistic idiosyncrasies. Two texts per decade and discipline were gathered, each sample containing around 10,000 words, excluding tables, figures, formulae, graphs, and all the quotations that were not representative of the author's speech. In addition, only English-speaking authors writing in English have been considered (Crespo and Moskowich, 2009).

The two scientific fields under survey are part of the Natural Sciences and the Humanities respectively according to the UNESCO's classification (1978) reproduced in Table 10.

Natural Sciences.	Astronomy, bacteriology, biochemistry, biology, botanics, chemistry, entomology, geology, geophysics, mathematics, meteorology, mineralogy, computing, physical geography, physics, zoology and other allied subjects.
Engineering and	Engineering sciences such as: chemistry, civil,

Technology.	electrical and mechanical engineering and their specialised subdivisions; forest products; applied sciences such as geodesy, industrial chemistry, etc.; architecture, the science and technology of food production; specialised technologies of interdisciplinary fields, e.g. systems analysis, metallurgy, mining, textile technology and other allied subjects.
Medical Sciences.	Anatomy, stomatology, basic medicine, paedriatics, obstretics, optometry, osteopathy, pharmacy, physiotherapy, public health services, technical health assistance and other allied subjects.
Agricultural Sciences.	Agronomy, zootechnics, fisheries, forestry, horticulture, veterinary medicine and other allied subjects).
Social Sciences.	Anthropology (social and cultural) and ethnology, demography, geography (human, economic and social), law, linguistics, management, political sciences, psychology, sociology, organisation and methods, miscellaneous social sciences and interdisciplinary, methodological and historical S&T activities relating to subjects in this group. Physical anthropology, physical geography and psychophysiology should normally be classified with the natural sciences.
Humanities.	Arts (history of art and art criticism, excluding artistic "research"), ancient and modern languages and literatures, philosophy (including the history of science and technology), prehistory and history, together with auxiliary historical disciplines such as archaeology, numismatics, palaeography, genealogy, etc.), religion, other subjects and humanistic branches as well as other methodological and historical S&T activities relating to the subjects in this group.

Table 10. UNESCO'S Fields of Science and Technology (1978)

The samples analysed correspond to 80 different texts. Tables 11 (Life Sciences) and 12 (History) below list the authors whose writings have been

sampled as well as the year of publication and the number of words in each extract:

AUTHOR	YEAR	TITLE	WORDS
Douglas, J	1707	*Myographiæ comparatæ specimen: or, a comparative description of all the muscles in a man and in a quadruped. … To which is added an account of the muscles peculiar to a woman, etc.M.D.*	10,045
Sloane, H	1707	*A Voyage to the islands Madera, Barbadoes, Nieves St Christophers and Jamaica; with the Natural History of the Herbs and trees, four footed beasts, fishes, birds …*	10,038
Keill, J	1717	*Essays on several parts of animal oeconomy. Essay IV: Of Animal Secretion*	9,812
Gibson, W	1720	*The farriers new guide: containing first, the anatomy of a horse, ... Secondly, an account of all the diseases incident to horses, …*	9,875
Blair, P	1723	*Pharmaco-botanologia: or, an alphabetical and classical dissertation on all the British indigenous and garden plants of the new London*	10,089
Boreman, T	1730	*A description of three hundred animals; viz. beasts, birds, fishes, serpents, and insects. With a particular account of the whale-fishery*	10,013
Blackwell, E	1737	*A Curious Herbal, containing five hundred cuts of the most useful plants which are now used in the practice of physick. Vol I*	10,045
Brickell, J	1737	*The Natural History of North-Carolina: with an account of the trade manners and customs of Christian and Indian inhabitants.*	10,103
Edwards,	1743	*A natural history of uncommon*	10,028

G		*birds. Most of which have not been figur'd or describ'd, and others very little known from obscure or too brief descriptions without figures, or from figures very ill design'd*	
Hughes, G	1750	*The natural history of Barbados*	10,044
Dodd, J S	1752	*An essay towards a natural history of the Herring*	10,019
Borlase, W	1758	*The natural history of Cornwall. The air, climate, waters, rivers, lakes, sea and tides*	9,997
Pennant, T	1766	*The British Zoology. Class I. Quadrupeds. II. Birds*	10,037
Bancroft, E	1769	*An essay on the natural history of Guiana, in South America*	10,074
Goldsmith, O	1774	*An history of the earth, and animated nature: In eight volumes. Vol 8*	10,103
Withering, W	1776	*A botanical arrangement of all the vegetables, naturally growing in Great Britain, with the descriptions of the genera and species*	10,091
Speechly, W	1786	*A treatise on the culture of the pine apple and the management of the hot-house. Together with a description of every species of insect that infest hot-houses, with effectual methods of destroying them*	10,017
Bolton, J	1789	*An History of Fungusses growing about Halifax. Wherein their various appearances in the different stages of growth, are faithfully exhibited … With a particular description of each species, in all its stages. Vol III*	10,052
Donovan, E	1794	*Instructions for collecting and preserving various subjects of natural history: as animals, birds, reptiles, shells, corals plants, &c.: Together with a treatise on the management of insects in their several states: selected from the best authorities*	10,013
Smith, J E	1795	*English Botany. Vol. IV. London: printed for the Author by J. Davis*	10,048
Jacson, M	1804	*Botanical lectures by a Lady*	10,051

E			
Wilson, A	1808	*American ornithology, or The natural history of the birds of the United States*	10,081
Wakefield, P	1806	*An introduction to the natural history and classification of insects, in a series of familiar letters*	9,805
Lawrence, W	1819	*Lectures on Physiology, zoology, and the natural history of man*	10,039
Jenner, E	1824	*Some observations on the migration of birds*	9,775
Goldman, J D	1828	*American Natural History vol. III*	10,028
Lincoln, A H	1832	*Familiar lectures on botany, including practical and elementary botany*	10,028
Jardine, W	1835	*The Naturalist's Library. Mammalia Vol. III. Ruminantia Part I. The Natural History of the ruminating animals, containing Deer, Antelopes, Camels, &c.*	10026
Pratt, A	1840	*Flowers and their associations*	10,023
Dalyell, J G	1848	*Rare and remarkable animals of Scotland Vol II*	10,010
Agassiz, E	1859	*A First Lesson in Natural History*	12,959
Darwin, Ch	1859	*On the Origin of Species by means of natural selection*	10,091
Huxley, T H	1863	*On the origin of species, or, The causes of the phenomena of organic nature: a course of six lectures to working men*	10,059
Spencer, H	1867	*The principles of Biology, v. II*	10,082
Macalister, A	1876	*An introduction to animal morphology and systematic zoology*	10,083
Lankester, P	1879	*Wild flowers worth notice ... for their beauty uses and associations*	10,080
Balfour, F	1880	*A treatise on comparative embryology V. I*	10,080
Galton, F	1889	*Natural Inheritance*	10,062
Marshall, A M	1893	*Vertebrate embryology*	10,044
Packard,	1898	*A text-book of entomology including*	10,016

A S		*the anatomy, physiology, embryology and metamorphosis of insects*	
TOTAL WORDS			403,965

Table 11. Samples in CELisT

AUTHOR	**YEAR**	**TITLE**	**WORDS**
Tyrell, J	1704	*The General History of England, Both Ecclesiastical and Civic: Containing the Reign of Richard II*	10,068
Anderson, J	1705	*An Historical Essay, shewing that the Crown and Kingdom of Scotland, is Imperial and Independent*	10,068
Crawford, G	1710	*A History of the Shire of Renfrew*	10,106
Oldmixon, J	1716	*Memoirs of Ireland from the Restoration, to the Present Times*	10,155
Strype, J	1721	*Ecclesiactical Memorials*	10,078
Penhallow, S	1726	*The History of the Wars of New-England, With the Easter Indians*	10,216
Horsley, J	1732	*Britannia Romana.Book the first*	10,065
Justice, E	1739	*A Voyage to Russia*	10,005
Bancks, J	1740	*The history of the life and reign of the czar Peter the Great, emperor of all Russia, and father of his country. The first book*	10,084
Hooke, N	1745	*The Roman History, from the building of Rome to the Ruin of the Commonwealth*	10,144
Chapman, Th	1750	*An Essay on the Roman Senate*	10,187
Birch, Th	1760	*The life of Henry Prince of Wales, Eldest Son of King James I*	10,048
Scott, S	1762	*The History of Mecklenburgh*	10,301
Adams, A	1769	*A concise, historical view of the perils, hardships, difficulties and discouragements which have attended the planting and progressive improvements of New-England*	10,068
Anderson,	1775	*The History of France*	10,036

W			
Cornish, J	1780	*The Life of Mr. Thomas Fermin, citizen of London*	10,054
Gibbon, E	1788	*The History of the Decline and Fall of the Roman Empire*	10,020
Gifford, J	1790	*The History of England from the earliest Times to the Peace of 1783. Vol. I.*	10,319
Adams, J	1795	*A View of Universal History, from the Creation to the Present Time*	10,120
Stock, J	1800	*A Narrative of What Passed at Killalla, in the County of Mayo, and the Parts Adjacent, during the French Invasion in the Summer of 1798*	10,182
Adolphus, J	1802	*The History of England, from the Accession of King George the Third, to the Conclusion of Peace in the Year one thousand seven hundred and eighty-three. In three volumes. Vol. III*	10,093
Warren, M C	1805	*History of the rise, progress and termination of the American revolution Interspersed with biographical, political and moral observations. In three volumes. Vol. I*	10,032
Bigland, J	1810	*The History of Spain, from the Earliest Period to the Close of the Year 1809. In two volumes. Vol. I*	10,341
Britton, J	1814	*The History and Antiquities of the Cathedral Church of Salisbury*	10,009
Hardiman, J	1820	*The History of the Town and County of Galway , from the Earliest period to the Present Time*	10,259
Callcott, M	1828	*A short history of Spain. In two volumes. Vol. II*	10,308
Aikin, L	1833	*Memoirs of the Court of King Charles the First. In two volumes. Vol. I*	10,022
Petrie, G	1837	*On the History and Antiquities of Tara Hill*	10,138
Smyth, W	1840	*Lectures on Modern History, from the Irruption of the Northern Nations*	9,938

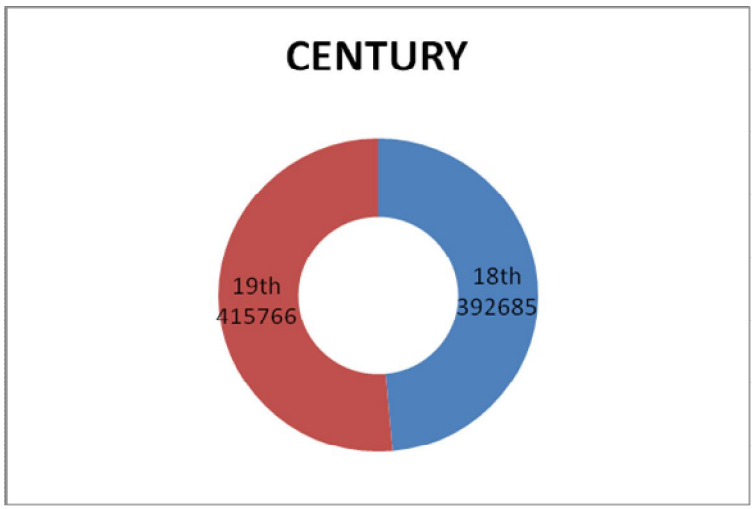
		to the Close of the American Revolution. In two volumes. Vol. II	
D'Alton, J	1844	*The History of Drogheda, with its environs; and an Introductory Memoir of the Dublin and Drogheda Railway. In two volumes. Vol. I*	10,101
Masson, D	1855	*Medieval History*	10,189
Sewell, E M	1857	*A First History of Greece*	10,057
Freer, M W	1860	*History of the Reign of Henry IV. King of France and Navarre. In two volumes. Vol. II*	10,102
Bennett, G	1862	*The History of Bandon*	10,040
Gray, J H	1872	*Confederation; or, The Political and Parliamentary History of Canada, from the Conference at Quebec, in October, 1864, to the Admission of British Columbia, in July, 1871. In two volumes. First volume*	10,051
Killen, W D	1875	*The Ecclesiastical History of Ireland. From the Earliest Period to the Present Times. Volume II*	10,087
Breese, S	1884	*The Early History of Illinois, from its Discovery by the French, in 1673, until its Cession to Great Britain in 1763. Including the Narrative of Marquette's Discovery of the Mississippi*	10,048
Kingsford, W	1887	*The history of Canada. Vol. I*	10,047
Cooke, A M	1893	*The Settlement of the Cistercians in England.*	10,112
Burrows, M	1895	*The History of the Foreign Policy of Great Britain*	10,188
TOTAL WORDS			404,486

Table 12. Samples in CHET

As can be seen in the two previous tables (Tables 11 and 12), I have used for this study a total of 808,451 words; of which 404,486 belong to *CHET* and 403,965 words to *CELisT*.

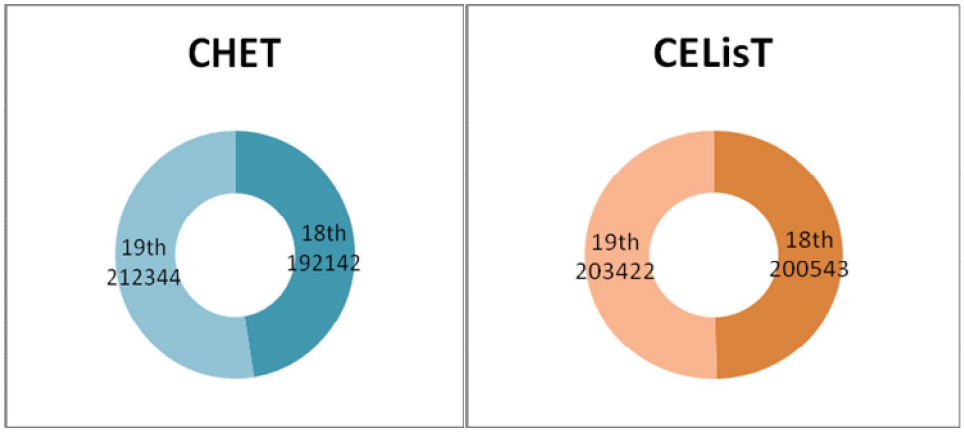
Methodologically speaking, the behaviour of attributive adjectives in scientific writing will be studied from different viewpoints. Such viewpoints will be determined by the use of five different variables which can be grouped into two different categories: text-related variables (discipline, date of publication of the texts and text-type) and author-related variables (sex and place of education). For this purpose it may be useful to describe my material according to these variables.

Stemming from the time variable, Graph 1 represents the total number of words in each century analysed. In it we can see that the nineteenth-century samples amount to 415,766 and those for the eighteenth century contain 392,685 words, which means a very balanced distribution.



Graph 1: words per century

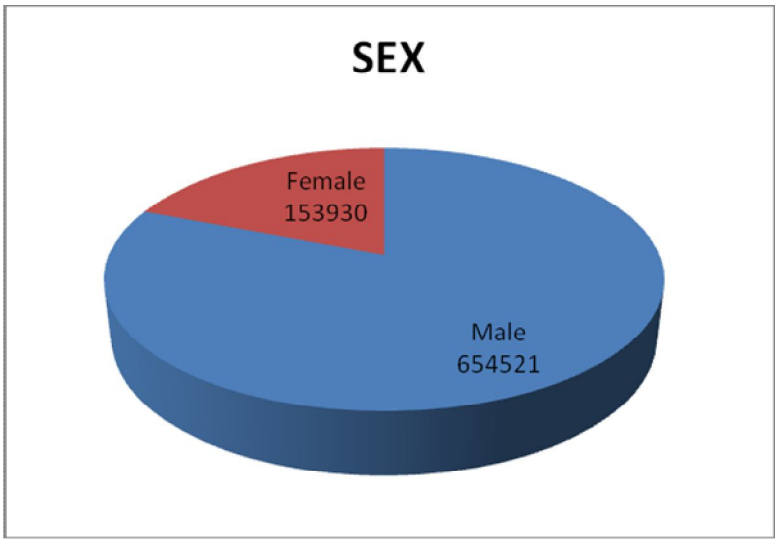
Graphs 2a and 2b below show the number of words in each century, on this occasion depending on the discipline analysed. Again, balance is present in terms of word-counts, especially in the Natural Sciences (Graph 2b)



Graph 2a. CHET: words per century Graph 2b. CELisT: words per century

The balance in the distribution of words per century is due to the characteristics and design of the *CC* itself.

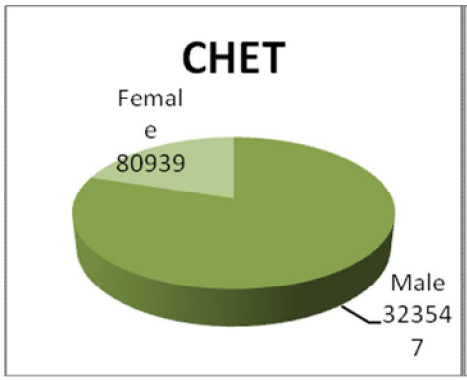
On the other hand, Graph 3 represents the variable sex and shows the total number of words per male and female authors.



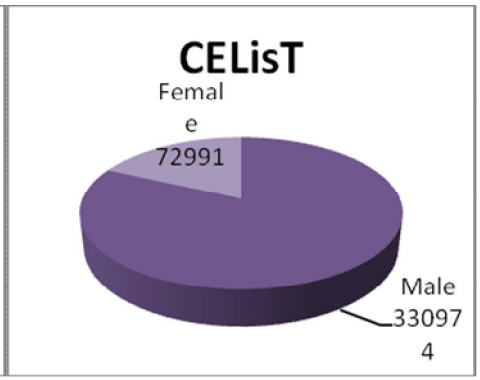
Graph 3: Words per sex

As the graph shows, my corpus contains a considerable lower number of words in samples written by female authors than by male ones. One of the purposes of the *CC* is to represent linguistic reality, and since, during the centuries under survey, the presence of women in science is limited, the amount of female texts is inferior to that of texts written by men.

Graphs 4a and 4b represent the number of words corresponding to samples produced by male and female writers in the two disciplines under survey. The absolute numbers given show that there is no apparent difference between the two sub-corpora:

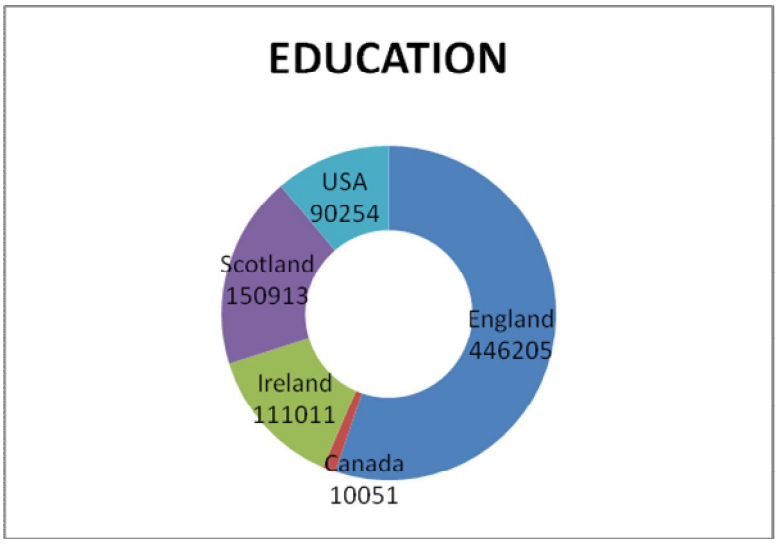


Graph 4a. CHET: words per sex



Graph 4b. CELisT: words per sex

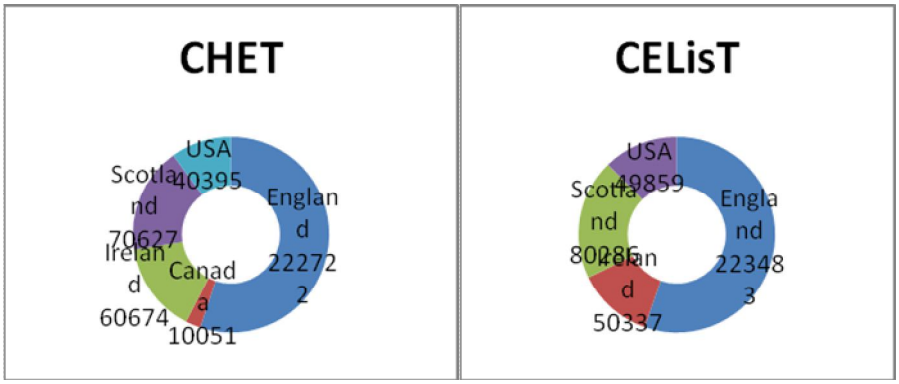
Concerning the geographical distribution of samples, that is to say, the places where authors were educated and acquired their writing habits, figures are as follows:



Graph 5: Words per place of education

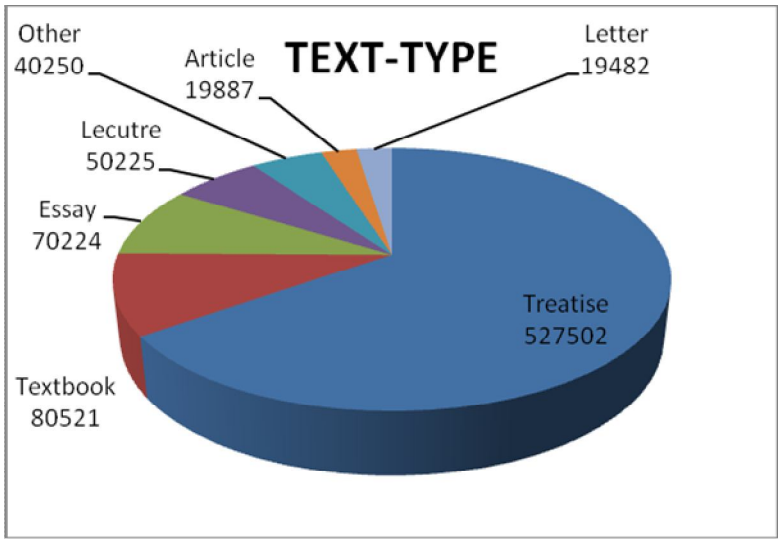
As can be seen, most authors had their training in England and the rest are more or less equally distributed among the United States, Scotland and Ireland with only a very limited representation of Canadian English.

The distribution of words depending on the geographical provenance of the authors for each discipline is shown in Graphs 6a and 6b. Graph 6a for History illustrates a slightly more diverse panorama than the one observed in Life Sciences where English writers clearly predominate:



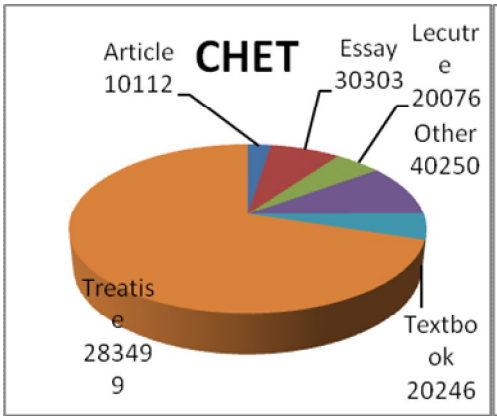
Graph 6a. CHET: place of education Graph 6b. CELisT: place of education

Text type is another variable that will be used for this study on attributive adjectives. My material is not homogeneous regarding this aspect since the samples in the *Coruña Corpus* have been extracted from works belonging to different tetx types. Seven of these different text types in the *CC* are represented in my corpus as shown in Graph 7 below;

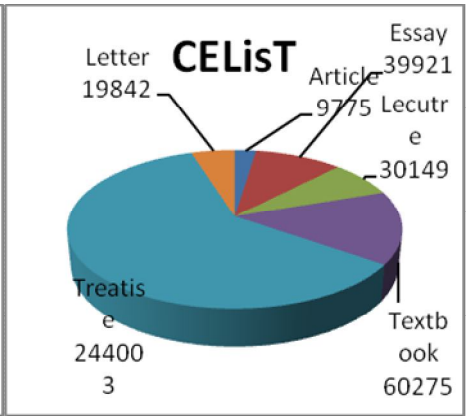


Graph 7: words per text-type

Finally, Graphs 8a and 8b below display the number of words of each text-type in the two disciplines. In these graphs we can see that not all text types nor the same ones appear in both disciplines



Graph 8a. CHET: words per text-type



Graph 8b. CELisT: words per text-type

The total number of words in my material amounts, therefore, to 808,451 words (see Table 13) from which 38,312 belong to the category adjective. Such adjectives have been found both in an attributive and a predicative position. In fact, 36,774 of these correspond to those in an attributive position (which represent 4.54% of the total words). In this particular work, I have disregarded *–ed* and *–ing* forms which are often difficult to differentiate from participles and gerunds. Likewise, I have omitted possessive and demonstrative adjectives. Numerals have been also discarded because they do not denote qualities or properties of the words they accompany.

	TEXTS	**WORDS**	**ADJECTIVES**
LIFE SCIENCES	40	40,3965	22,800
HISTORY	40	40,4486	15,512
TOTAL	80	80,8451	38,312

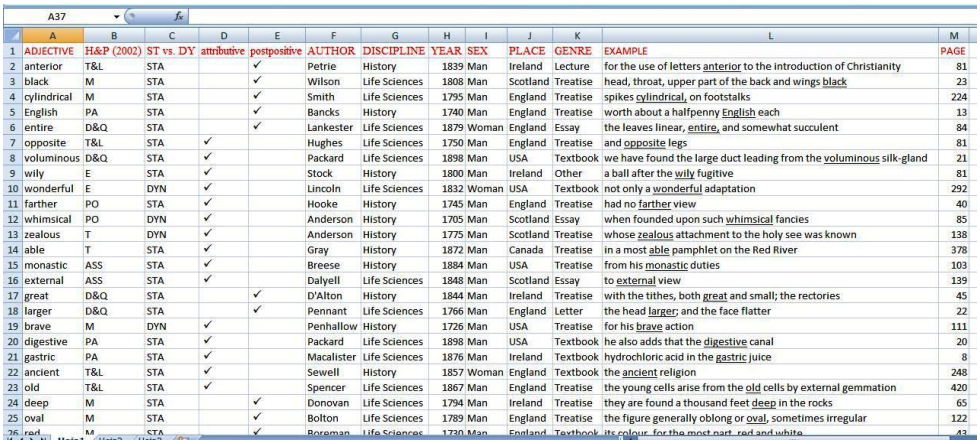
Table 13. Texts data

The different tools and programs applied when analysing the data will be dealt with in the following section.

3.2. Tools

In order to study the distribution and use of attributive adjectives three main tools have been used: The *Coruña Corpus Tool*, Microsoft Excel and the Matlab statistics toolbox (t-test, Wilcoxon signed-rank test, ANOVA test and Kruskal-Wallis test). The former, as any concordance

program, was used to search for the adjectives in the texts under survey. *The Coruña Corpus Tool* (CCT, henceforth) is a software application developed by the Information Retrieval Lab in collaboration with the MuStE Group at the University of A Coruña ("MuStE Research Group", 2008). Microsoft Excel has been used to create several spreadsheets in which thirteen different fields have been created with different purposes. Figure 1 below illustrates the structure of one of these spreadsheets containing information about the texts, about their authors and about the variables described above that would be used for the analysis.



	A	B	C	D	E	F	G	H	I	J	K	L	M
1	ADJECTIVE	H&P (2002)	ST vs. DY	attributive	postpositive	AUTHOR	DISCIPLINE	YEAR	SEX	PLACE	GENRE	EXAMPLE	PAGE
2	anterior	T&L	STA		✓	Petrie	History	1839	Man	Ireland	Lecture	for the use of letters anterior to the introduction of Christianity	81
3	black	M	STA		✓	Wilson	Life Sciences	1808	Man	Scotland	Treatise	head, throat, upper part of the back and wings black	23
4	cylindrical	M	STA		✓	Smith	Life Sciences	1795	Man	England	Treatise	spikes cylindrical, on footstalks	224
5	English	PA	STA		✓	Bancks	History	1740	Man	England	Treatise	worth about a halfpenny English each	13
6	entire	D&Q	STA		✓	Lankester	Life Sciences	1879	Woman	England	Essay	the leaves linear, entire, and somewhat succulent	84
7	opposite	T&L	STA	✓		Hughes	Life Sciences	1750	Man	England	Treatise	and opposite legs	81
8	voluminous	D&Q	STA	✓		Packard	Life Sciences	1898	Man	USA	Textbook	we have found the large duct leading from the voluminous silk-gland	21
9	wily	E	STA	✓		Stock	History	1800	Man	Ireland	Other	a ball after the wily fugitive	81
10	wonderful	E	DYN	✓		Lincoln	Life Sciences	1832	Woman	USA	Textbook	not only a wonderful adaptation	292
11	farther	PO	STA	✓		Hooke	History	1745	Man	England	Treatise	had no farther view	40
12	whimsical	PO	DYN	✓		Anderson	History	1705	Man	Scotland	Essay	when founded upon such whimsical fancies	85
13	zealous	T	DYN	✓		Anderson	History	1775	Man	Scotland	Treatise	whose zealous attachment to the holy see was known	138
14	able	T	STA	✓		Gray	History	1872	Man	Canada	Treatise	in a most able pamphlet on the Red River	378
15	monastic	ASS	STA	✓		Breese	History	1884	Man	USA	Treatise	from his monastic duties	103
16	external	ASS	STA	✓		Dalyell	Life Sciences	1848	Man	Scotland	Essay	to external view	139
17	great	D&Q	STA		✓	D'Alton	History	1844	Man	Ireland	Treatise	with the tithes, both great and small; the rectories	45
18	larger	D&Q	STA		✓	Pennant	Life Sciences	1766	Man	England	Letter	the head larger; and the face flatter	22
19	brave	M	DYN	✓		Penhallow	History	1726	Man	USA	Treatise	for his brave action	111
20	digestive	PA	STA	✓		Packard	Life Sciences	1898	Man	USA	Textbook	he also adds that the digestive canal	20
21	gastric	PA	STA	✓		Macalister	Life Sciences	1876	Man	Ireland	Textbook	hydrochloric acid in the gastric juice	8
22	ancient	T&L	STA	✓		Sewell	History	1857	Woman	England	Textbook	the ancient religion	248
23	old	T&L	STA	✓		Spencer	Life Sciences	1867	Man	England	Treatise	the young cells arise from the old cells by external gemmation	420
24	deep	M	STA		✓	Donovan	Life Sciences	1794	Man	Ireland	Treatise	they are found a thousand feet deep in the rocks	65
25	oval	M	STA		✓	Bolton	Life Sciences	1789	Man	England	Treatise	the figure generally oblong or oval, sometimes irregular	122
26	red	M	STA		✓	Boreman	Life Sciences	1730	Man	England	Textbook	its colour, for the most part, red and white	43

Figure 1. Database sample

To prove the validity of the results obtained and with the intention of checking the existence of statistically significant differences among the different categories some statistical tests have been carried out. In order to verify the assumptions of normality, that is, whether the data is well-

modelled by a normal distribution or not, and the assumptions of homoscedasticity, that is, if the samples have the same finite variance, the Kolmogorov-Smirnoff and Bartlett tests were performed. In cases where the input data accomplished such assumptions parametric tests were used. Otherwise, non-parametric tests were applied.

Statistical procedures developed to perform statistical analyses can be categorized into two classes: parametric and nonparametric, depending on the particular type of data employed (Higgins, 2003). Parametric tests assume that the data are drawn from a known type of probability distribution (normal distribution); whereas nonparametric tests do not rely on such an assumption (Geisser and Johnson, 2006). Generally speaking, parametric methods make more assumptions than non-parametric ones (Corder and Foreman, 2009). If those assumptions are correct, parametric methods can produce more accurate and precise estimates, that is, they have more statistical power. Therefore, these tests will reject the null hypothesis (the statement of no effect or no difference) when the null hypothesis is false, with a higher probability or, in other words, they have a low probability of making a false negative decision. However, if those assumptions are incorrect, parametric methods can be very misleading.

The t-test for two independent samples test is based on the t distribution[3] if the null hypothesis is supported. The t-test can be applied to one sample, paired samples, and independent samples (Park, 2009). According to this author, the independent sample t-test compares the means of two samples. Since the independent sample t-test is limited to only comparing the means of two groups, the one-way ANOVA (Analysis of Variance) can compare more than two groups (Park, 2009).

The Wilcoxon signed-rank test is used in order to determine whether or not a sample is derived from a population in which the median is equal to a specified value (Sheskin, 2003). It can be used as an alternative to the paired Student's t-test, t-test for matched pairs, or the t-test for dependent samples when the population cannot be assumed to be normally distributed. On the other hand, the Kruskal-Wallis test is a non-parametric method for testing whether samples originate from identical populations (Van Hecke, 2010). It is used for comparing more than two samples that are independent, or not related, and its parametric equivalent is the one-way ANOVA.

Table 14 below shows a summary of the statistical tests applied depending on the number of variables considered and on whether the assumptions of homoscedasticity and normality are accomplished or not.

[3] The t distribution is a family of continuous probability distributions that, like the normal distribution, is bell-shaped, continuous and symmetrical. It arises from the problem of estimating the mean of a normally distributed population when the sample size is small and the population standard deviation is unknown.

VARIABLE NUMBER	TEST TYPE	TEST
Two	Parametric	t-test
	Non parametric	Wilcoxon signed-rank
More than two	Parametric	ANOVA
	Non parametric	Kruskal-Wallis

Table 14. Statistical tests applied to the data

In cases where the assumptions of normality (the data samples have a normal distribution) and homoscedasticity (the populations tested have the same variance) were accomplished, the t-test and the ANOVA test were applied. The T-test was applied if the variables, that is, the data to be compared, are two. If there are more than two, then the ANOVA test was used. In a non-parametric scenario the Wilcoxon signed-rank test and the Kruskal-Wallis test were applied. When there were two variables the Wilcoxon signed-rank test was applied, but when there were more than two, the Kruskal-Wallis test was preferred.

The ensuing pages will be devoted to the analysis and explanation of my findings once these tools have been employed.

4. ANALYSIS OF DATA

This study of attributive adjectives will first account for the overall distribution of adjectives in my corpus and will then focus on the five variables mentioned in the previous chapter, which will be later studied in some depth. Such variables include the discipline to which the texts belong, the time in which they were written, the sex of the author, his/her place of education and the text-type into which the samples have been classified by the *Coruña Corpus* compilers. The eight categories of adjectives proposed by Huddleston and Pullum (2002), already explained in section 2.3.4, as well as the semantic classification of stative vs. dynamic will be applied to these variables.

In my corpus there is a total of 808,451 words, of which 38,312 are adjectives (4.73% of total words). As Table 15 below shows, of these 38,312 adjectives, 1,538 are postnominal adjectives, representing the 4.01%

of total adjectives, whereas 36,774 are prenominal adjectives (95.99%). These expected figures are accounted for by historical reasons as posited by Crystal (2006), who claimed that adjectives in Old English were usually placed before the noun. In the same vein, Rissanen (1999) stated that pronominal adjectives were preferred and this was no doubt favoured by the increasing fixity of word order during Middle English which became the rule as pointed by, Fischer and van der Wurff (2006).

ADJECTIVES	PRENOMINAL	POSTNOMINAL
38,312	36,774	1,538

Table 15. Adjectives in the Corpus

My material contains a total of 36,774 attributive adjectives, of which 3,111 types were found. The most frequent type is *great*, which appears 1,488 times (representing 4.04% of all attributive adjectives). It is followed by *small*, occurring 673 times (1.82%) and by *little*, with 611 tokens (1.66%). Next, *large* occurs 575 times (1.56%) and *whole* 434 times (1.18%). Finally, *new* has 428 hits (1.16%). The lowest frequencies are registered for the forms *didactic*, *worthless*, *wondrous*, *wingless*, *waxy* and *votive*, which are *hapax legomena*. Table 16 below summarises the most frequently used attributive adjectives.

ADJECTIVE	N. OF TOKENS	PERCENTAGE
great	1,488	4.04%
small	673	1.82%
little	611	1.66%
large	575	1.56%
whole	434	1.18%
new	428	1.16%

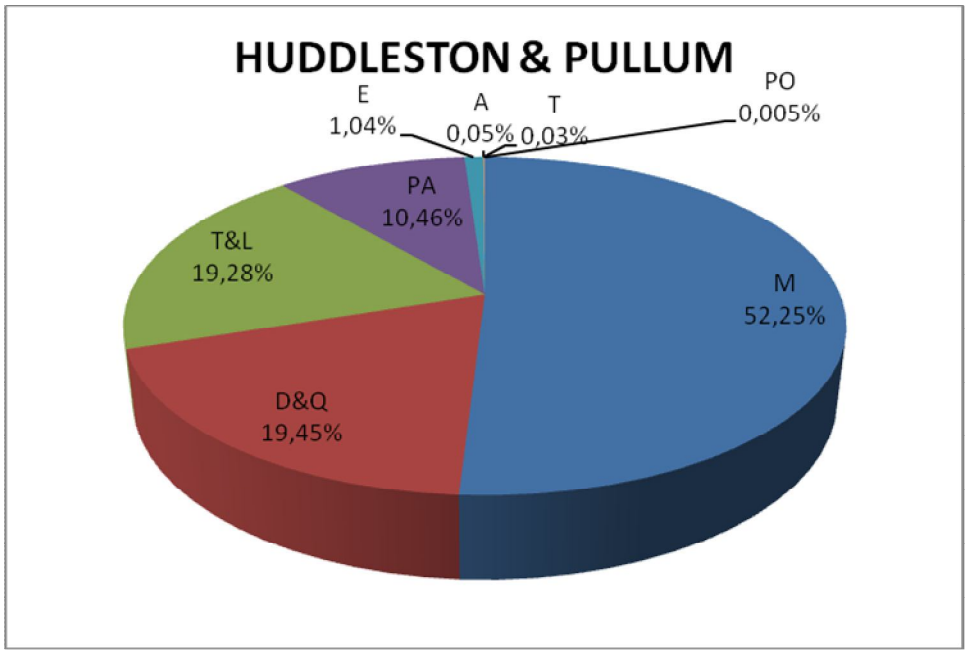
Table 16. Attributive adjectives most often found

As can be seen, the most frequent types are very general from the point of view of reference.

Of the eight categories proposed by Huddleston and Pullum in their work *The Cambridge Grammar of the English Language* (2002) (Degree and Quantifying attributives (D&Q), Temporal and Locational attributives (T&L), Associative attributives (A), Process-oriented attributives (PO), Modal attributives (M), Particularising attributives (PA), Expressive attributives (E), Transferred attributives (T)) the category that has been most frequently encountered is that of Modal attributives. This represents 52.25% of the total attributive adjectives recorded. Within this category the most frequent Modal attributive is *good*, which appears 401 times, representing 2.17% of all Modal attributives. These are followed by Degree and Quantifying attributives (with 19.45% of all attributive adjectives), being *great* the most frequent type, occurring 1,265 times (17.67%). Temporal and Locational attributives is the third category, representing 19.28% of all attributive adjectives. Of them, *new* is the one occurring more often (427

tokens; 6.12%). Particularising attributives is the fourth category (10.46%). And within this group it is *English* the type with the highest percentage of occurrence (236 tokens; 6.14%).

The presence of the remaining categories (Associative attributives, Expressive attributives, Process-oriented attributives and Transferred attributives) does not reach 1.05% of the total number of attributive adjectives (see Graph 9 for details).



Graph 9. Frequency of Huddleston & Pullum's categories

As has been pointed out in section 2.3.4., Associative attributives, Process-oriented attributives and Transferred attributives do not apply literally to the head nominal and Expressive attributives convey an evaluative judgement. According to Holmes (1987), scientific texts from the seventeenth and

eighteenth centuries are viewed as reports presenting creative investigations, discoveries, etc., but they are not seen themselves as creative achievements. This could explain the low amount of these four categories in the present study. The reason for the predominance of Modal attributives could be found in the very nature of these adjectives. They may denote mode or manner, and, since the samples under survey are descriptive, authors might have needed those adjectives to convey such descriptions.

The second category is Degree and Quantifying attributives which can be explained on the grounds of the abundant use of *great.* The profusion of *great* could be due to the many different meanings and uses of this adjective; it could refer to dimension, intensity, quantity or extreme degree. As previously mentioned, Temporal and Locational attributives express relative time and location in space of the nouns they modify. One of the characteristics of History texts is to locate people and their achievements in time; in turn, texts on Life Sciences locate the elements of Nature in space. These characteristics implicit in the disciplines themselves might account for the position of Temporal and Locational attributives in my frequency scale. In the case of Particularising attributives they serve to select a specific member or group. In this sense, texts on Life Sciences define and classify the components of nature, whereas History texts describe the evolution of peoples and nations. However, within this group, the most abundant adjectives are not very specific but provide vague descriptions.

In terms of type/token ratio, Modal attributives is the category where we can find a wider lexical variety with a total of 2,234 different adjectives; followed at a distance by Particularising attributives, with 390 types and Temporal and Locational attributives, with 377 forms. Contrariwise, the category less lexically rich, in terms of adjectives, is Degree and Quantifying attributives, with 170 different attributive adjectives. As has been previously seen, Modal attributives encompass a wide range of adjectives, those denoting mode, manner or form. This, together with the texts under survey being mostly descriptive, could explain the wide assortment in this category. Particularising attributives and Temporal and Locational attributives are not very distant in terms of variety of adjectives. However, one possible explanation for Particularising attributives being the second category more lexically varied might be found in the fact that the majority of these attributive adjectives are the ones referring to nationality or origin, and since the texts analysed in this study deal mostly with the British Isles, Ireland and North America there is no need for many nationality attributives. On the other hand, Temporal and Locational attributives deal with the relative time and location in space, which might encompass a smaller range of adjectives than the one belonging to Modal attributives. Finally, as the purpose of Degree and Quantifying attributives is to express the degree of the property expressed by the head nominal, the

number of adjectives required to fulfil this function is smaller than in the other three categories.

The scarce presence of the remaining four categories does not allow for a clear outline of their behaviour. The Process-oriented kind of attributives contains only two different adjectives; Expressive attributives (with 23 different adjectives), Associative attributives (with 14 forms), followed by Transferred attributives (5 types) are the following in our variety scale. Table 17 below summarises the type/token ratio within the eight categories proposed by Huddleston and Pullum (2002):

	M	**PA**	**T&L**	**D&Q**	**PO**	**A**	**T**	**E**
Total adjectives	18,431	3,838	6,968	7,451	2	22	13	347
Different types	2,234	390	377	170	2	14	5	23
Type/ token ratio	12.12%	10.16 %	5.41%	2.3%	100 %	63.63 %	38.46 %	6.6 %

Table 17. Type/token ratio within Huddleston & Pullum's categories

Regarding the classification into stative and dynamic adjectives, stative are the ones that occur more often along this study, representing 93.49% of the total attributive adjectives. The most frequent stative adjective is *great* (appearing 1,488 times, representing 4.32% of all stative adjectives). It is followed by *small*, occurring 673 times (1.95%) and *little* (611 tokens;

1.77%). The presence of dynamic adjectives amounts to 6.5% of all attributive forms, being *good* the most abundant one (401; 16.73%). *Strong* (210; 8.76%) and *curious* (82; 3.42%) are the second and third types in order of frequency. Dynamic adjectives are more lexically varied, with 289 forms, than stative adjectives, with 2,834 forms. These findings are summarised in Table 18 below.

	Stative	**Dynamic**
Total adjectives	34,378	2,396
Different types	2,834	289
Type/token ratio	8.24%	12.06%

Table 18. Type/token ratio in Stative vs. Dynamic

Table 18 above represents the results obtained in the stative and dynamic adjectives. Of the total number of attributive adjectives found, 34,378 are stative whereas only 2,396 are dynamic. Among the group of stative adjectives, as has been already said, we have a total of 2,834 different types, which represent 8.24% of the attributive adjectives. On the other hand, among the dynamic ones, we find 289 different types, which is the 12.06% of attributive adjectives.

In the next subsection I will analyse the first of the proposed variables, that is, the discipline to which the texts under survey belong: Life Sciences and History.

4.1. The variable discipline

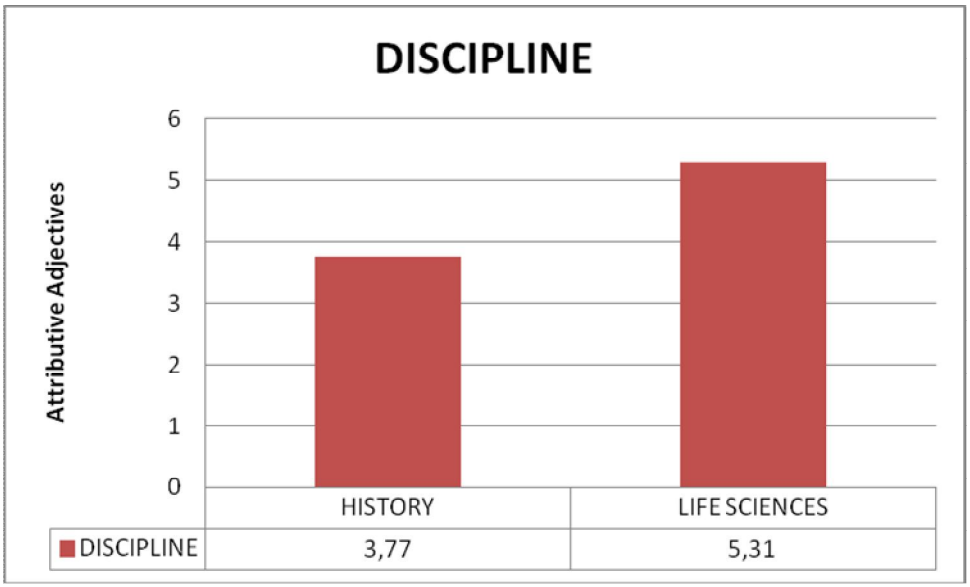
According to the data obtained for this study, the discipline containing the highest proportion of attributive adjectives is Life Sciences. As can be seen in Graph 10 below, 22,800 words corresponding to 5.31% of the words in *CELisT* are adjectives, being 94.24% of the total attributive adjectives. On the other hand, 3.77% of the words in *CHET* are adjectives, and 98.54% of these adjectives are attributive. Table 19 shows the number of prenominal as well as postnonimal adjectives found in both disciplines.

	CELisT	***CHET***
Words	403,965	404,486
Adjectives	22,800	15,512
Prenominal	21,488	15,286
Postnominal	1,312	226

Table 19. Data per Discipline

The fact that Life Sciences, as seen in previous sections, has been defined as a science whose purpose is to investigate, describe and classify everything in nature (Hankins, 1985 and Porter, 2003) might explain the fact that Life Sciences texts show a higher proportion of attributives adjectives. Contrariwise, since History has been defined as a collection of facts and their causes, studying mankind, its progress, its fluctuations and interests (Ferguson, 1780; Godwin, 1797 and Black, 1926), and must attempt to explain the actions of the past in some domain (Cook, 1988), the need of

attributive adjectives diminishes when compared with Life Sciences texts (see Graph 10).



Graph 10. Attributive adjectives per discipline

Examples [101a] and [101b] below illustrate the use of attributive adjectives in Life Sciences. According to Lu (2010), the writer of natural history incorporates personal observations and philosophical reflections upon nature.

[101a] *with a great number of black, short, capillary fibres* (Bolton, 1789: 103)

[101b] *into a minute, single, and very simple eye-spot* (Darwin, 1859: 441)

On the other hand, examples in [102a] and [102b] illustrate that History narrates mere facts not commonly resorting to attributive adjectives to do so. In fact, Macaulay (1852) pointed out that the good historian must not attribute expression to his characters, if it is not authenticated by sufficient testimony, and cannot be creative.

[102a] *by a considerable number of the young nobility* (Gifford, 1790: 189)

[102b] *the whole affair took place in a small angle of the oldest settled part of Canada* (Gray, 1872: 361)

Since it is my intention to analyse in some detail the attributive adjectives included n my database, the following subsection will present my results according to the eight categories of attributive adjectives proposed by Huddleston and Pullum (2002). I will also examine here the behaviour of these adjectives within the two disciplines.

4.1.1. Huddleston and Pullum's categorisation

It is important to begin by mentioning that not all the categories proposed by Huddleston and Pullum (2002) are present in both disciplines. As Table 20 below shows, no Process-oriented attributives were found in

CELisT, for instance. The two disciplines analysed use what in these authors' terminology is known as Modal attributives. Focusing on the disciplines separately, History has a higher proportion of Particularising attributives (16.53% in *CHET* vs. 6.1% in *CELisT*); however, Life Sciences exhibits a higher number of Modal attributives (52.77% vs. 46.37%), Temporal and Locational attributives (19.29% vs. 18.45%) and Degree and Quantifying attributives (21.35% vs. 16.77%). This complementary distribution seems to indicate that both disciplines have different stylistic preferences.

	CELisT	**CHET**
M	52.77%	46.37%
D&Q	21.35%	16.77
T&L	19.29%	18.45%
PA	6.1%	16.53%
E	0.42%	1.66%
A	0.02%	0.11%
T	0.009%	0.07%
PO	0	0.01%

Table 20. Attributive adjectives per discipline according to Huddleston & Pullum's categorisation

A possible explanation for the higher use of Modal attributives in *CELisT* might be found in the very nature of Life Sciences, whose aim is to classify the forms of nature. This purpose can be fulfilled by using Modal attributives, since they provide information about mode, manner or form of the noun they accompany. Examples of Modal attributives in Life Sciences and History texts are shown in [103a] and [103b], respectively.

[103a] *wherein twelve or fifteen <u>yellow</u> ova* (Dalyell, 1848: 161)

[103b] *Wallace and his little band of <u>free</u> Scotchmen* (Adams, 1795: 98)

According to the statistical test run, in this case the t-test, there are no significant differences in the use of Temporal and Locational attributives and Degree and Quantifying attributives among the two disciplines analysed. Examples of Degree and Quantifying and Temporal and Locational attributives in *CELisT* can be seen in [104a]-[105a]:

[104a] *for a more <u>ample</u> description* (Smith, 1795: 242)

[104b] *than a <u>large</u> capital* (Cornish, 1780: 5)

Likewise, examples of these attributive adjectives in *CHET* are shown in [104b]-[105b].

[105a] *between the <u>metacarpal</u> bone* (Douglas, 1707: 119)

[105b] *for the <u>new</u> religion* (Masson, 1855: 92)

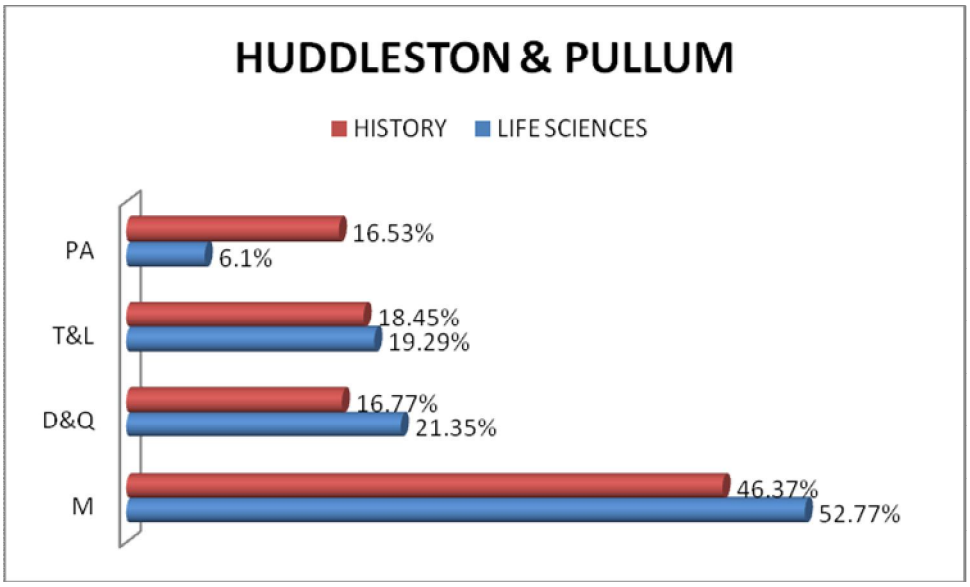
Particularising attributives serve, as pointed out before, to pick out a specific member or group; this would be the case of adjectives denoting nationality.

Texts in *CHET* deal with the history of nations and their personages, using, therefore, more adjectives denoting nationality than texts in *CELisT*. My data reveal that 9.05% of attributive adjectives in *CHET* denote nationality, whereas only 1.36% of those in *CELisT* do (see [106a] and [106b] for examples of adjectives denoting nationality in *CELisT* and *CHET*, respectively).

[106a] *the little Indian king-fishers* (Edwards, 1743: 11)

[106b] *both the English and Irish channel were* (Aikin, 1833: 368)

Concerning other categories, as Graph 11 displays, the differences among Expressive attributives, Associative attributives, Transferred attributives and Process-oriented attributives are so low that definitive conclusions cannot be drawn.



Graph 11. Attributive adjectives per discipline according to Huddleston & Pullum's categorisation)

The frequency and use of stative adjectives, in contrast to dynamic adjectives will be discussed in the next subsection.

4.1.2. Stative vs. Dynamic

As was previously said, the main difference between stative and dynamic adjectives is of a semantic nature. Dynamic adjectives denote qualities that are thought to be under the control of the possessor and stative adjectives denote a state or condition which could be considered to be permanent (Quirk *et al*, 1985). On the other hand, and according to Bruce and Wiebe (1999) and Hatzivassiloglou and Wiebe (2000), subjectivity refers to aspects of language used to express opinions and evaluations. In this connection, Hatzivassiloglou and Wiebe (2000) state that dynamic

adjectives are better predictors of subjective sentences that the class of adjectives as a whole and that they tend to be evaluative of an attribute that is not always present, but under the control of the possessor.

Lakoff (1966), Quirk *et al* (1985) and Kjellmer (2001) mentioned that adjectives are typically stative. This can be seen in this study, where both disciplines under survey use more stative adjectives than dynamic ones. As Table 21 shows, History is the discipline which uses the highest amount of dynamic adjectives (9.83% in *CHET* vs. 4.12% in *CELisT*). Although, once again, Macaulay (1852) argued that the good historian must not attribute expression to his characters; eighteenth-century historians may have been, according to Black (1926: 2), "often perverse in their conclusions". Barnes (1926: 185) mentions that these historians were influenced "by the literary canons of historical novels" being their tendency "really anti-historical"; and Bentley (1999: 9) points out that the historians of this period exhibit "an undercurrent of opinion about the past", arguing a position and reflecting cynicism. This way of writing history might imply a higher use of dynamic adjectives.

	Stative	**Dynamic**
CHET	90.12%	9.87%
CELisT	95.87%	4.12%

Table 21. Stative and dynamic adjectives per discipline

Examples of dynamic and stative adjectives in Life Sciences texts can be seen in [107a-b], respectively, whereas those in History texts are illustrated in [108a-b].

[107a] *the most curious animals in the different classes of quadrupeds* (Bancroft, 1769: 248)

[107b] *the simplest form of cells* (Macalister, 1876: 32)

[108a] *the adventurous spirit of the Normans* (Masson, 1855: 89)

[108b] *again abrupt cliffs of perpendicular mural rock* (Breese, 1884: 86)

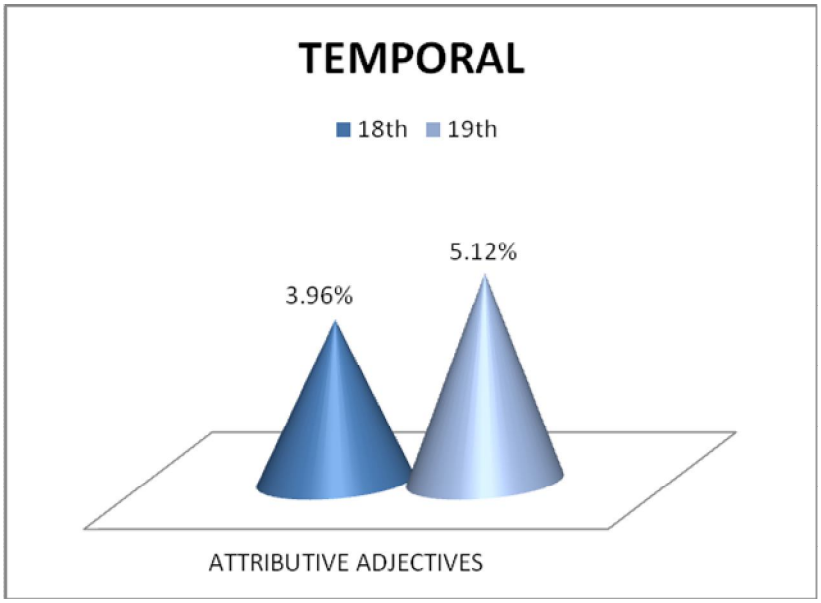
The next section deals with the second variable analysed which compares the two centuries used.

4.2. The time variable

In this section I will try to provide the description of the use of adjectives in texts from the eighteenth and nineteenth centuries in order to check whether time as a variable may have exerted any influence on their use in scientific texts. In other words, whether there has been any diachronic change from one century to the other.

When comparing both centuries we can see that it is in the nineteenth century that we find more attributive adjectives. In fact, 5.12% of

the words in nineteenth-century texts are attributive adjectives, whereas we only find a 3.96% of such forms in eighteenth-century texts (see Graph 12 below).



Graph 12. Use of attributive adjectives per century

According to Knight (1975) one of the possible reasons for this could be that scientific papers became austere and rigorous along the eighteenth century. Meadows (1987: 106) believes that, due to the imprecision and ambiguity of language, scientists had to develop rigorous definitions and an agreed and precise vocabulary, "learning to speak and write the very precise, and therefore rather dull and humourless, language of science". He also mentions that because of this new need of accuracy and rigorousness words may have been borrowed from other languages or even from

everyday speech. Examples of adjectives from eighteenth-century Life Sciences and History texts can be seen in [109a] and [109b], respectively.

[109a] *it is no small instance* (Hughes, 1750: 73)

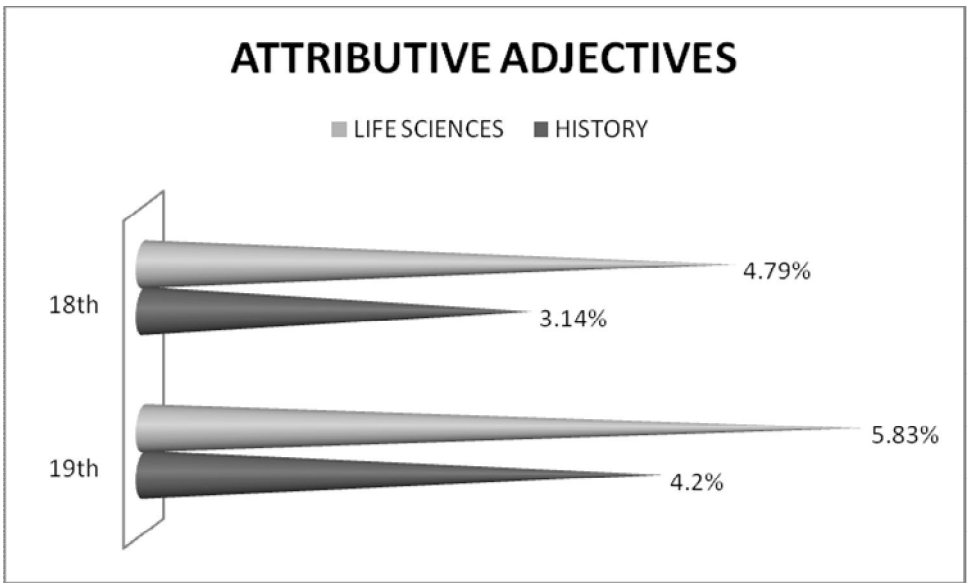
[109b] *this distribution of property is a strong proof* (Chapman, 1750: 8)

On the other hand, it is in the nineteenth century when the expansion of specialised knowledge created difficulties of writing popular books (Yeo, 1984). Görlach (1999) believes that there was, in many pre-1830 texts, a development from a 'classical' prose style to a more elaborated 'romantic' style in later periods. According to Bäcklund (2006) this could explain the results found in her study about an increase in the use of modifiers during the nineteenth century. This could also account for the results obtained in the present study. Examples of adjectives in nineteenth-century Life Sciences and History texts can be seen in [110a] and [110b] below:

[110a] *of a beautiful green, glassy, translucent colour* (Dalyell, 1848: 140)

[110b] *into one industrious and influential community* (D'Alton, 1844: 15)

If we pay attention to the two disciplines in the whole period analysed, we find that Life Sciences authors use more attributive adjectives than History ones (see Graph 13below).



Graph 13. Use of attributive adjectives per century and discipline

As seen in section 4.1., the descriptive character of Life Sciences could account for the abundance of attributive adjectives as opposed to History, which relates facts and contains a lower number of these adjectives. As Graph 13 above shows, the differences between disciplines are more evident in the nineteenth than in the eighteenth century. Yeo (1984) pointed out that in the first half of the nineteenth century an increase of specialization of knowledge took place, which could be reflected in a rise in the number of attributive adjectives. It can also be seen in Graph 13 that the frequency of

adjectives in both disciplines during the nineteenth century is higher. This increase is mainly attested in Life Sciences texts. It was in the mid-eighteenth century when "Carl Linnaeus took upon himself the task of classifying all animals, minerals, and particularly vegetables in the world" (Bernal, 1969: 636) and this, together with the fact that nineteenth-century scientists wanted the world to be aware of their work and its implications (Knight, 1986), could explain the high increase in the number of attributive adjectives during the nineteenth century.

The different uses of the eight categories of attributive adjectives proposed by Huddleston and Pullum (2002), depending on the century when the texts were published, will be studied in depth in the following subsection.

4.2.1. Huddleston and Pullum's categorisation

Like in section 4.1.1, and as Table 22 shows, not all the categories proposed by Huddleston and Pullum (2002) are present in the two centuries under survey; in fact, no Process-oriented attributives were found in the texts written in the nineteenth century.

	18th	**19th**
M	54.34%	46.61%
D&Q	21.55%	17.75%
T&L	16.5%	20.62%
PA	7.88%	12.25%

E	1.13%	0.79%
A	0.06%	0.05%
T	0.04%	0.02%
PO	0.01%	0

Table 22. Attributive adjectives per century according to Huddleston & Pullum's categorisation

In the two centuries analysed Modal attributives is the category of attributive adjectives more frequently used. If we pay attention to the two centuries separately we can observe that during the eighteenth century Modal attributives (54.34% vs. 46.61%) and Degree and Quantifying attributives (21.5% vs. 17.75%) are the most frequent ones; whereas in nineteenth-century texts Temporal and Locational attributives (20.62% vs. 16.5%) and Particularising attributives (12.25% vs. 7.88%) are the predominant ones. However, and according to the t-test, there are no significant differences among the use of Modal attributives and Particularising attributives in the eighteenth and nineteenth centuries.

Meadows (1987) states that eighteenth-century scientists should speak and write about science using precise and accurate language, which could explain why during the eighteenth century we find a higher use of Modal attributives. We can see below examples of these adjectives in the two centuries under survey [111a-b].

[111a] *of dry soft timber* (Hughes, 1750: 80)

[111b] *upon the solid earth* (Packard, 1898: 6)

One reason for finding more Degree and Quantifying attributives in eighteenth-century texts might be related to the position of the adjective in the noun phrase. Prenominal attributive adjectives were used for the expression of dimension in the eighteenth century whereas this same quality was expressed by postnominal adjectives in the nineteenth century (Fowler, 1876). Examples of Degree and Quantifying attributives in attributive and postnominal position in my material can be seen in [112a-b] and [113a-b] below.

[112a] *of the <u>whole</u> community of Scotland* (Adams, 1795: 95)

[112b] *a very <u>small</u> standing army* (Burrows, 1895: 179)

[113a] *we have several thrushes <u>larger</u>* (Wilson, 1808: 29)

[113 b] *territories <u>immense</u> in extent* (Gray, 1872: 374)

As shown in Graph 13 above, the increase of attributive adjectives during the nineteenth century is higher in History texts, where we have found a higher proportion of Particularising attributives. [114a-b] show examples of Particularising attributives in both centuries.

[114a] *he placed his <u>chief</u> reliance* (Gifford, 1790: 181)

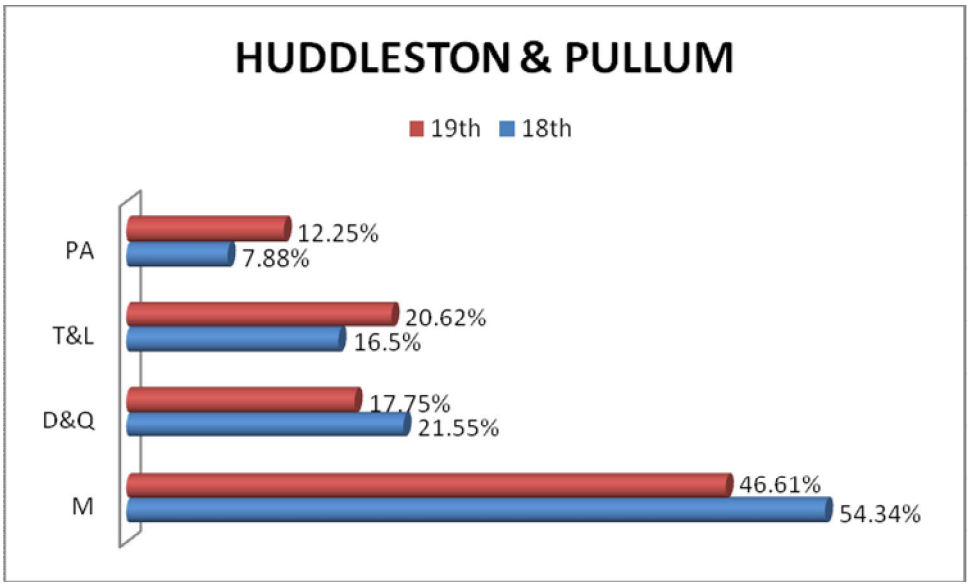
[114b] *of any <u>particular</u> social, local, or other body of persons* (Galton, 1889: 36)

It is precisely during the nineteenth century that more attention was paid to details (Coleman, 1977) and science was written in a more elaborated style (Görlach, 1999). This concern for detailed accounts could also explain why more Temporal and Locational attributives were used in this century. For examples of this kind of attributive adjectives in the two centuries analysed see [115a-b] below.

[115a] *their <u>upper</u> surface is minutely scaly* (Smith, 1795: 252)

[115b] *to revert to the <u>ancestral</u> type* (Huxley, 1863: 86)

In this case, the differences among Expressive attributives, Associative attributives, Transferred attributives and Process-oriented attributives are so low that no definite conclusions can be drawn. Graph 14 illustrates the results obtained.



Graph 14. Attributive adjectives per century according to Huddleston & Pullum's categorisation)

In the pages that follow I will consider the frequency and use of adjectives when viewed as stative and dynamic in the two centuries under survey.

4.2.2. Stative vs. Dynamic

The number of stative adjectives surpasses that of dynamic adjectives in both centuries. Examples [116] and [117] illustrate the use of dynamic and stative adjectives, respectively

[116] *of a very honest and <u>brave</u> gentleman* (Crawfurd, 1710: 79)

[117] *the <u>whole</u> external surface* (Keill, 1719: 120)

However, as can be seen in Table 23, the proportion of dynamic adjectives found in samples from the eighteenth century is higher than that from the nineteenth century (7.38% vs. 5.84%). This could be due to the fact that, according to Bentley (1999: 9-10), eighteenth-century writers of history texts "displayed an undercurrent of opinion about the past", creating "texts in which satire forms a crucial part of the tone for the entire enterprise". On the other hand, contemporary authors such as Humboldt (1822) claimed that nineteenth century writers of history texts should not be active and creative. In this vein, authors included in the *Coruña Corpus* such as Whewell (1840) stated that, during the nineteenth century the language of science should be used in an exact and rigorous manner. Nevertheless, the t-test was applied showing no significant differences in the use of dynamic adjectives among the centuries analysed.

	Stative	**Dynamic**
18th	92.61%	7.38%
19th	94.15%	5.84%

Table 23. Stative and dynamic adjectives per century

The analysis of a new variable and, consequently, the possible differences in the use of attributive adjectives between male and female writers, will be presented in what follows.

4.3. The sex variable

In this section I will try to see whether the sex of the authors may have exerted any influence on their choice of attributive adjectives.

In order to understand the findings relating to this variable, a brief summary of the broad gender differences in language use will be provided. When revising what linguists have said about language and sex we can see that, already at the beginning of the twentieth century, Jespersen (1922) pointed out the deficiency of women's speech in their use of 'hyperbole', their 'incoherent sentences', 'inferior command of syntax', 'less extensive vocabulary', and 'non-innovative' approach to language. As a product of his time, he also claimed that there were a few adjectives like *pretty* and *nice* that might be more often used by women than by men. These considerations may reflect the widespread idea about women's intellectual capacities.

In her 1973 seminal paper "Language and woman's place", Lakoff poses some of the ideas about female language that had been used to that moment: due to different social and cultural constraints, women's language is powerless (also Lakoff, 2003), exemplified by an assumed preference for a variety of so-called weakening devices, such as softer expletives, hesitant intonation, statements formed as questions, tag questions, trivial topics, empty adjectives, etc. She also mentions that "upper-class British men and many academic men and ministers (especially those who emulate British norms) often use 'women's language'" (1973: 53). She also mentions that

weakness in women's language leads them to use empty adjectives. Lakoff (1973) also observes that there are sets of adjectives that seem to be largely confined to women's speech in their figurative use; such is the case of adjectives used to name colours, with women reported to make far more precise discriminations in naming colours. In a later work, Lakoff (2005: 12) states that "men and women spoke "different languages" – or more accurately, used the same linguistic forms with different intents and understandings".

Brown (1980) believes that women speak more formally, using a higher proportion of standard forms than men do in comparable situations. Trudgill (1972) and Fasold (1990), as well as Romaine (2003) explained it saying that that way of speaking provides them with social status. On the other hand, Coates and Cameron (1988: 14) believe that this idea of women being more conservative than men (Eckert, 1989) is a recurrent piece of folklore used when necessary. They illustrate this saying that "Otto Jespersen asserts that women's conservatism and modesty prevent them from innovating in language, whereas he praises men for coining 'new, fresh expressions'".

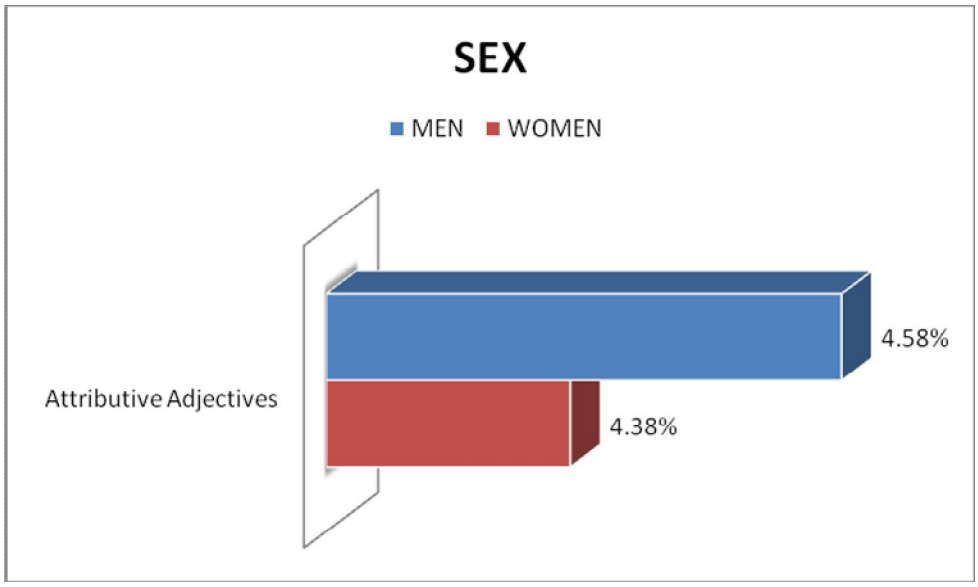
Woolf (1990) points out that women's language is more elastic and less pompous than men's. In turn, Holmes (1995: 2) thinks that women are clearly at an advantage in terms of verbal skills, and that they "use language to establish, nurture and develop personal relationships. Men tend to see

language more as a tool for obtaining and coveting information. They see talk as a means to an end, and the end can often be very precisely defined". More recently, Tannen (2003) mentions that women's language is more indirect than men's.

The different way in which women and men use language, in accordance with the above mentioned, is reflected in the findings of this study, in which more attributive adjectives have been found in texts written by men (example displayed in [118]) than in those by women (see [119] for an example). As can be seen in Graph 15, in my material the 4.58% of the words used by male are attributive adjectives, while the 4.38% are used by women, which is but a slight difference.

[118] *with large noddules* (Donovan, 1794: 67)

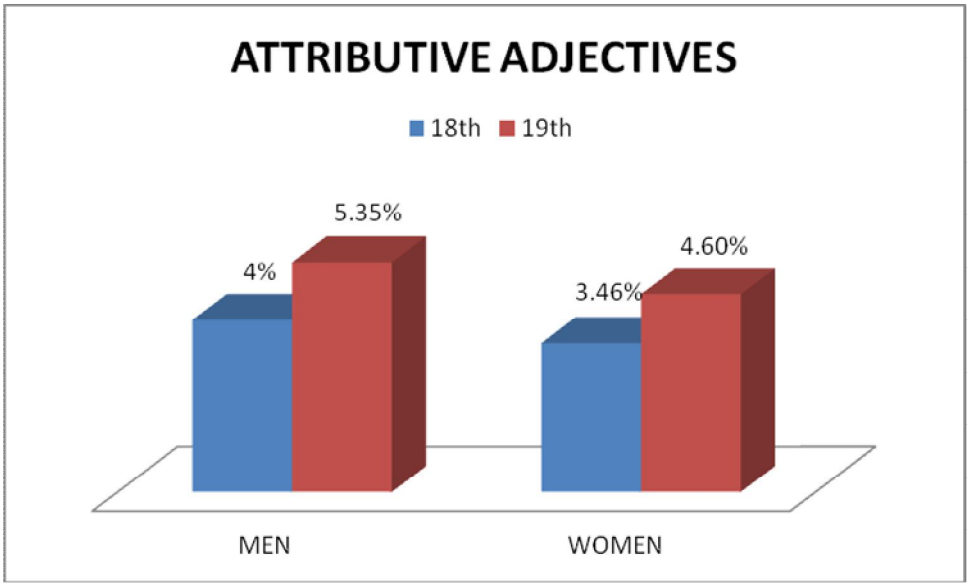
[119] *this is esteemed a vulnerary plant* (Blackwell, 1737: 7)



Graph 15. Use of attributive adjectives per sex

That men used more adjectives than women could be explained if, as Woolf suggests (1990), women tended to be less pompous than men, more conservative, formal and standard in their language. However, women make far more precise discriminations in naming colours (Lakoff, 1973). In fact, I have found that women use more adjectives naming colours. In my data, 5.33% of the adjectives used by women are those naming colours, whereas only 3.23% of the attributive adjectives in samples written by men do the same.

As regards its evolution in time, the sex variable (Graph 16 below) seems to have no influence since the use of attributive adjectives increases during the nineteenth century in texts written both by male and female authors.



Graph 16. Use of attributive adjectives per sex and century

The lower use of attributive adjectives in eighteenth century samples written by women can be explained because, according to Coates and Cameron (1998: 14), women were blamed for introducing new terms into the English lexicon. These authors also mention, contrary to Woolf's (1990) opinion, that "men, by implication more conservative, zealously guarded the purity of the standard language".

The rise in the use of adjectives during the nineteenth century is due to the changes that took place in Britain after the Industrial Revolution and the Universal Education Act of 1872, when "there were greater educational opportunities for a wider portion of "newfangled English", that is, the newly codified standard" (Romaine, 2003: 105). This author posited as well that it

was also in the second half of the nineteenth century that the "good grammar and the right accent became social capital in an age in which the definitions of "gentleman" and "lady" were no longer based entirely on hereditary titles and land".

To illustrate adjective use by male authors I have included examples [120a] and [120b]:

[120a] *by the small army left with regulus* (Hooke, 1745: 40)

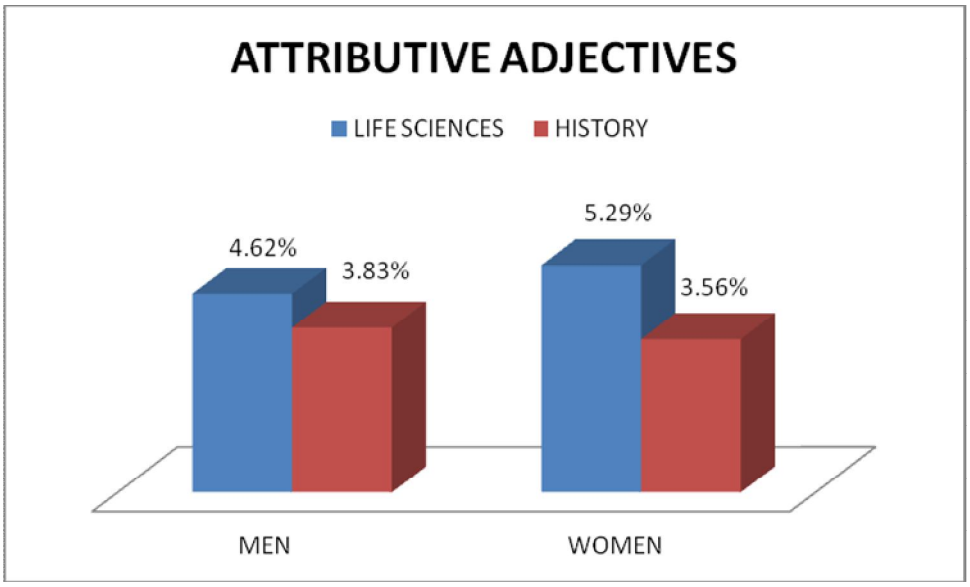
[120b] *by having a long beak* (Darwin, 1859: 444)

Examples of attributive adjectives written by women can be seen in [121a] and [121b] below:

[121a] *by their uncommon bravery* (Scott, 1762: 141)

[121b] *in a time of profound peace* (Aikin, 1833: 368)

When combining disciplines with the variable sex, a similar behaviour in the use of attributive adjectives can be traced both in men and women when they wrote texts both on Life Sciences and on History (see Graph 17 below).



Graph 17. Use of attributive adjectives per sex and discipline

The information in Graph 17 above confirms that all writers follow the same tendency in the two disciplines.

The next subsection analyses how men and women use the eight categories of attributive adjectives proposed by Huddleston and Pullum (2002).

4.3.1. Huddleston and Pullum's categorisation

As can be seen in Table 24 below, no Transferred and Process-oriented attributives were found in texts written by female writers, therefore not all categories can be analysed. Being Modal attributives the predominant category, my data, however, reveal that male and female writers use certain types of adjectives in Huddleston and Pullum's taxonomy in different ways.

It is in texts by male writers that more Temporal and Locational attributives (20.03% vs. 14.08%), as well as Particularising attributives (10.66% vs. 9.39%) have been found. In contrast, women exhibit a higher proportion of Modal (55.29% vs. 48.94%) and Degree and Quantifying attributives (20.02% vs. 19.39%).

	Men	**Women**
M	48.94%	55.29%
D&Q	19.32%	20.02%
T&L	20.03%	14.08%
PA	10.66%	9.39%
E	0.9%	1.12%
A	0.049%	0.1%
T	0.043%	0
PO	0.006%	0

Table 24. Use of attributive adjectives per sex and Huddleston & Pullum's categorisation

One possible reason for women in my corpus using more Modal attributives could be their higher use of the particular type of colour adjectives (see [122a] as an example). This, in turn, is due to the greater discrimination in naming colours characteristic of women I have already mentioned (Lakoff, 1973). In fact, women are said to use more qualifiers in general (Lakoff in Parlee, 1979). Example [122b] shows a Modal attributive used by a man.

[122a] *which bears a small <u>yellowish</u> <u>green</u> flower* (Pratt, 1840: 217)

[122b] *are formed of the <u>woody</u> substance* (Withering, 1776: xix)

According to the statistical test applied, there are no significant differences in the use of Degree and Quantifying attributives, Temporal and Locational attributives and Particularising attributives as for the sex variable. In addition, since the difference in Particularising attributives and Degree and Quantifying attributives is very small, I could not say they have a distinct behaviour. Examples of Degree and Quantifying attributives, Temporal and Locational attributives and Particularising attributives in texts written by male authors can be seen in [123a-125a]. In turn, [123b-125b] show examples of this kind of adjectives used by women.

[123a] *the <u>whole</u> inferior surface* (Godman, 1828: 63)

[123b] *start from a <u>single</u> little animal* (Agassiz, 1859: 16)

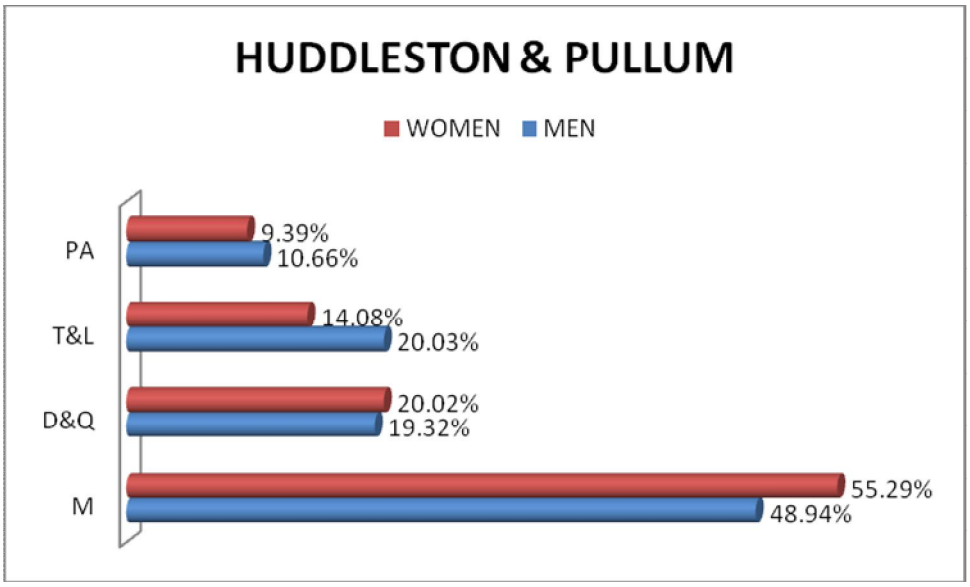
[124a] *the <u>above</u> stipend from the impropriator* (D'Alton, 1844: 41)

[124b] *is now chiefly used in the <u>rural</u> districts of England* (Lankester, 1879: 74)

[125a] *is the <u>vitelline</u> membrane* (Balfour, 1880: 50)

[125b] *of <u>protestant</u> refugees* (Aikin, 1833: 379)

Again, the differences among Expressive attributives, Associative, Transferred and Process-oriented attributives are so low that definitive conclusions cannot be reached. Graph 18 shows the results obtained.



Graph 18. Sex. Use of attributive adjectives per sex and Huddleston & Pullum's categorisation

In the next section, the possible differences in the use of stative and dynamic adjectives by male and female writers will be studied.

4.3.2. Stative vs. Dynamic

All the authors in my corpus use more stative than dynamic adjectives (see Table 25). Although the statistical tests applied (t-test) showed there are no significant differences in this use, women exhibit a higher proportion of dynamic adjectives than men do (6.24% vs. 7.72%).

	Stative	**Dynamic**
Men	93.75%	6.24%
Women	92.27%	7.72%

Table 25. Stative and dynamic adjectives per sex

Examples [126] and [127] contained instances of dynamic adjectives written by male and female authors, respectively.

[126] *first <u>active</u> service in the field* (Gray, 1872: 364)

[127] *to relinquish his <u>ambitious</u> hopes* (Scott, 1762: 153)

One explanation for these results can be found in the fact that, according to Lakoff (1973: 51), there is a group of adjectives, those "indicating the speaker's approbation or admiration for something", that are more often used by women. Most of these adjectives are dynamic. Likewise, Carli (1990) stated that women tend to be more social than men and to exhibit a social-emotional or relational orientation in interaction with others which is not so visible in the case of male authors. Carli's statement could also explain why women resort to a higher number of dynamic adjectives.

The fourth variable to the applied in this analysis is that of geographical origin. Then, the place where the authors have acquired their writing habits will be studied next in some depth.

4.4. Geographical variable

In this section the place of education of the authors is investigated in order to ascertain whether it may have had any influence on their use of

attributive adjectives. The eighty texts analysed were published in five different countries, three in Europe and two in North America. England, Scotland and Ireland are all represented in my data as well as the United States of America and Canada. The data extracted from my samples according to the geographical variable will be first presented. Next, a detailed account of these data will be provided.

4.4.1. Europe vs. North America

As is well known, some of the differences to be observed in the adjectives under survey may be due to historical grammatical differences. The variety of English spoken in North America has an important influence from early settlers. According to Schneider (2006), most seventeenth-century settlers came from northern and western England, Scotland and Ireland. It might be no surprise, then, that a mixture of the working-class speech from these regions constituted the basis of colonial mid-Atlantic American speech.

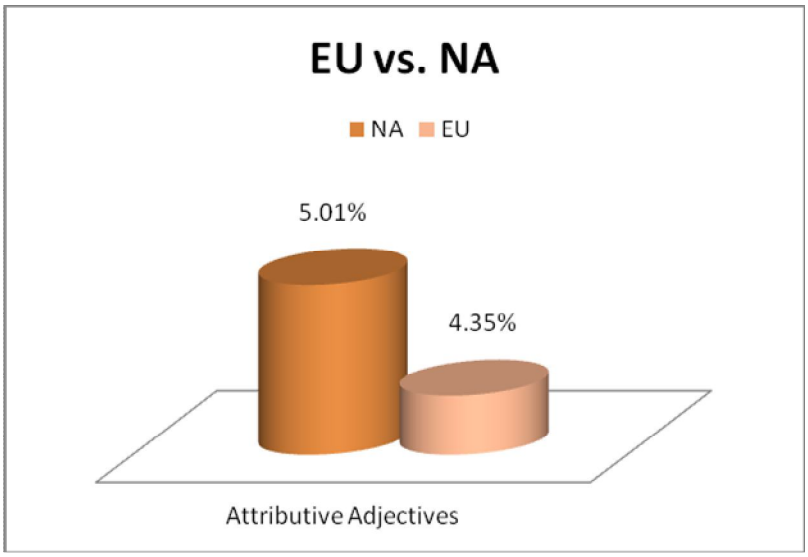
Crystal (2006) and Rohdenburg (2009) have already pointed out some grammatical differences between British and American English which could be valuable for the explanation of my findings. Authors such as Rohdenburg (2009) mentioned the omission of the reflexive, a further advanced process of simplification, double object constructions and their

passive equivalents. Crystal (2006), in turn, claimed differences in word order [128a], as well as in the use of the article [128b].

[128a] *Hudson River* vs. *River Thames*

[128b] *a half hour* vs. *half an hour*

Although after its application the t-test proved there are no significant differences, my data reveal that authors educated in North America exhibit more attributive adjectives (5.01%) than the ones educated in Europe (4.35%). Graph 19 below shows the results obtained.



Graph 19. Use of attributive adjectives according to the geographical: EU vs. NA

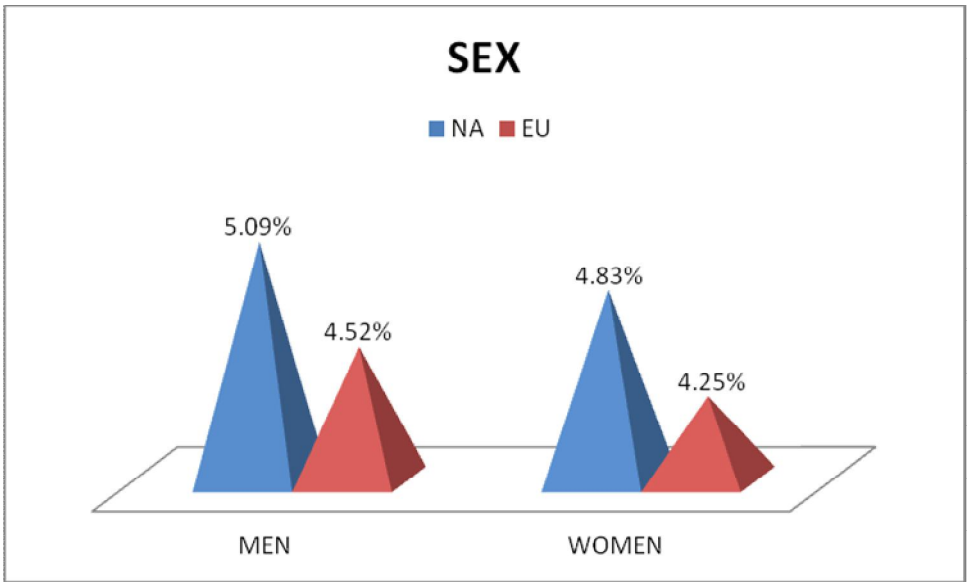
As has just been said, one of the differences between British English and North American English is seen in the word order within the noun phrase (Crystal, 2006). This different word order within the noun phrase is attested in my corpus as examples [129] and [130] show. For the sake of comparison, a case of an attributive adjective written by an author educated in Europe can be seen in [131].

[129] *the colour of the belly is of a dull yellowish brown* (Bancroft, 1769: 208)

[130] *I find two things remarkable* (Penhallow, 1726: 115)

[131] *than add to the superfluous juices* (Donovan, 1794: 40)

Men use a higher amount of attributive adjectives than women on both continents (see Graph 20) although the statistical test (ANOVA) run showed no significant differences among the results like in the analysis of previous variables.



Graph 20. Use of attributive adjectives according to geographical variable and sex

Examples of attributive adjectives written by men educated in Europe can be seen in [132a], whereas examples of those written by women can be seen in [132b].

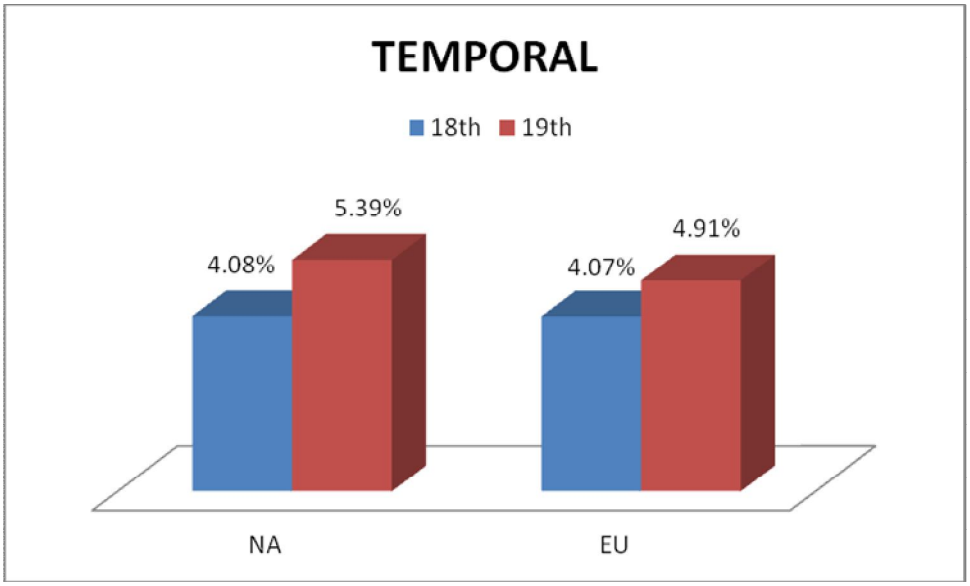
> [132a] *or the mud walls, woollen hovels, and narrow precincts* (Gibbon, 1788: 90)
>
> [132b] *with violet velvet beset with golden fleurs de lis* (Freer, 1860: 319)

Examples [133a] and [133b] show instances of attributive adjectives written by men and women, respectively, both educated in North America.

[133a] *the timid deer and the shaggy buffalo* (Breese, 1884: 90)

[133b] *added to the unspeakable loss of their brave commander* (Warren, 1805: 268)

Graph 21 shows that the already mentioned increase observable along the nineteenth century is independent from the geographical variable since both authors educated in North America (examples [135a-b]) and authors educated in Europe (examples [134a-b]) display a higher proportion of attributive adjectives during this period.



Graph 21. Use of attributive adjectives according to geographical variable and time

These are the examples:

[134a] *hath four very thin membranaceous wings* (Hughes, 1750: 85)

[134b] *his unconstitutional measures, his arbitrary designs* (Smyth, 1840: 51)

[135a] *possessing both a territorial, personal, and pecuniary character* (Gray, 1872: 368)

[135b] *postembryonic development, and systematic position* (Packard, 1898: 25)

The possible differences in the use of the eight categories proposed by Huddleston and Pullum (2002) depending on broad geographical differences, that is, the continent where the authors have acquired their writing habits will be analysed in the pages that follow.

4.4.1.1. Huddleston and Pullum's categorisation

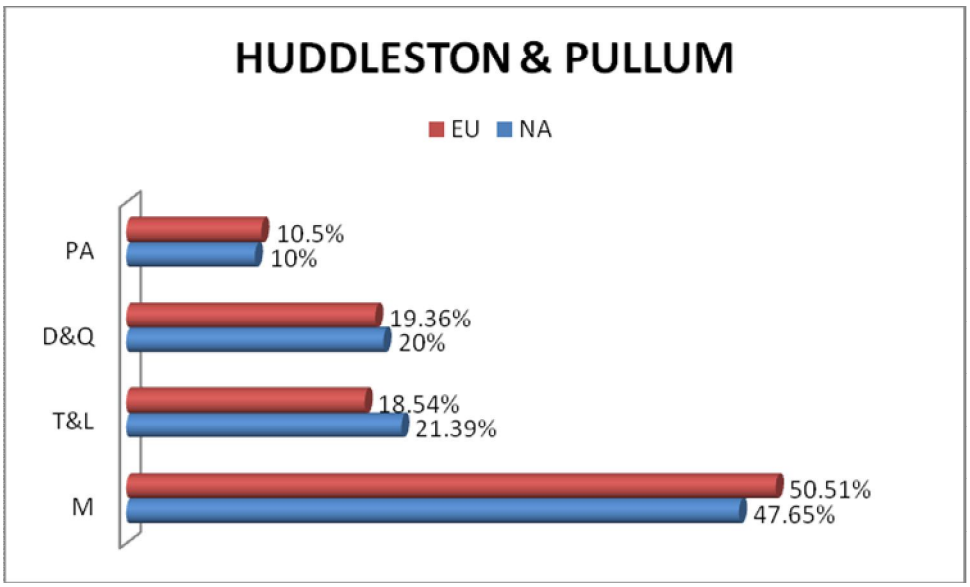
Once again, not all the categories proposed by these authors are present in the samples analysed. As can be seen in Table 26 below, there are no Process-oriented attributives in the texts whose authors have been educated in North America. Modal attributives are the most frequent kind of attributive adjectives in my corpus, regardless of geographical origin. Focusing on each of the eight categories proposed by Huddleston and Pullum separately, authors from Europe exhibit more Modal attributives (50.51% vs. 47.65%) and Particularising attributives (10.5% vs. 10%) than American authors. On the other hand, American authors used more

Temporal and Locational attributives (21.39% vs. 18.54%) as well as Degree and Quantifying attributives (20% vs. 19.36%) than European writers. The slight difference among Associative attributives, Expressive, Transferred and Process-oriented attributives allow me to reach no fixed conclusions.

	NA	EU
M	47.65%	50.51%
T&L	21.39%	18.54%
D&Q	20%	19.36%
PA	10%	10.5%
E	0.9%	0.94%
A	0.019%	0.06%
T	0.019%	0.03%
PO	0	0.006%

Table 26. Use of attributive adjectives by European and Northern American authors according to Huddleston and Pullum's categorisation

It is precisely Graph 22 below that summarises the use and frequency of the eight categories proposed by Huddleston and Pullum (2002) depending on the continent where the authors have acquired their writing habits.



Graph 22. Use of attributive adjectives by European and Northern American authors according to Huddleston and Pullum's categorisation

One explanation for the higher use of Modal attributives in the texts written by European authors could be found in the fact that the author educated in Canada acquired his scientific writing habits in Nova Scotia, where French was largely spoken during the eighteenth and nineteenth centuries, and therefore influenced Canadian English. As is well-known, adjectives naming form and colour go after the noun in French (Laenzliger, 2005) and the influence of this Romance language could be seen in example [136b], whose author was educated in Canada. Similarly, [136a] represents an example of a Modal attributive used by an author educated in England.

[136a] *as a <u>linear</u> opacity* (Marshall, 1893: 361)

[136b] *the <u>mountainous</u> character* (Gray, 1872: 378)

The greater amount of Particularising attributives in texts written by European authors could be explained due to the fact that, in the European texts analysed there is a higher percentage of texts using this kind of attributive adjectives than in those written by American authors (64.28%. vs. 60%). Such would be the case of those samples dealing with one special kind of plants (like Lankester's text), animals (Dalyell's), or cities (Stock's) and kings (Aikin's text). [137a] and [137b] display examples of Particularising attributives in texts written by European and North American authors, respectively.

[137a] *by a Presbyterian minister* (Killen, 1875: 229)

[137b] *development of Canadian prosperity* (Gray, 1872: 355)

The nature of the American texts analysed might explain why they present more Temporal and Locational attributives. That would be the case of those describing animals and plants and those history texts that describe the different wars, in which the authors have to explain where and when these acts happened. Coincidentally, 70% of the texts written by the authors educated in North America were from the nineteenth century and were written by men, who, as has been mentioned in previous sections, are the ones using more Temporal and Locational attributives. Authors such as Breese, educated in the United States of America, make use of such adjectives as [138] shows.

[138] *by his old malady* (Breese, 1884: 92)

As seen in Graph 22, above, the difference in the use of Degree and Quantifying attributives is very small. Examples of these adjectives by writers educated in Europe and North America can be seen in [139a] and [139b].

[139a] *but this simple form of bone development* (Macalister, 1876: 18)

[139b] *or move it in a complete circle* (Packard, 1898: 33)

Like in the analysis of previous variables, the statistical tests performed showed there are no significant differences in the use of the eight categories of attributive adjectives proposed by Huddleston and Pullum (2002).

The next section deals with the frequency and use of stative adjectives, in contraposition to dynamic, depending on where the writers have been educated.

4.4.1.2. Stative vs. Dynamic

Table 27 below ratifies that all the authors in my corpus seem to prefer stative rather than dynamic adjectives. And, the t-test shows there are no significant differences from a statistical point of view. However, North American authors resort to dynamic adjectives more often than those from Europe (8.03% vs. 6.26%).

	Stative	**Dynamic**
NA	91.96%	8.03%
EU	93.73%	6.26%

Table 27. Stative and dynamic adjectives by European and Northern American authors

In an attempt to find an explanation for these results, we could go back again to the French influence on Canadian English. When adjectives have a strong subjective reading in French they premodify the noun (Laenzlinger, 2005). Since, as mentioned in subsection 4.1.2 above, dynamic adjectives are related to subjectivity, this is the reason why most adjectives in samples by North American authors are dynamic. Some examples of dynamic adjectives as used by North American authors are displayed in [140] and [141].

[140] *by these merciless insects* (Goldsmith, 1774: 126)

[141] *of responsible government* (Gray, 1872: 367)

The study of North American authors is complemented by a study in some depth of the samples by authors from the English-speaking territories in Europe. This will be the topic of the next subsection.

4.4.2. Europe

As done in section 4.4.1., a brief summary of the differences among the English spoken in the British Isles is given. Crystal (2006) points out that of all the varieties of English which have developed within the British Isles the one which is more divergent from Standard English are those associated with Scotland. Notwithstanding this, for Millward (1996: 380),

"the grammar of written and educated spoken Scots differs little from that of Standard British English". Miller (2004: 60) states that one example of the grammatical differences between British English and Scottish English can be seen in the use of the comparative forms, which "are used only before *than*: *Sue is bigger than Jane.* Elsewhere the superlative is used, as in *Who is biggest, Sue or Jane?*". According to Douglas (2006), the Scottish language began to be threatened by increasing Anglicisation from mid-sixteenth century. It was in the eighteenth century when the educated class in urban communities of Scotland became monolingual in English, deciding to accept English as a formal variety in speech (Görlach, 2001).

This last author also talks about the English spoken in Ireland (IrE, henceforth), he mentions that even though the majority of the inhabitants were still Irish-speaking in the eighteenth century, the written registers and the formal spoken ones had long become anglicised (Görlach, 2001). Crystal (2006) points out that English became the dominant language, and the language of prestige, in Ireland during the mid-nineteenth century; although, according to Hickey (1995), it was neither sudden nor complete; in fact, in the early nineteenth century, nearly half the population spoke Irish (Crystal, 2006 and O'Cuiv, 1969, found in Hickey, 1995). According to Millward (1996), there are numerous differences between the dialects of northern and southern Ireland, due to the fact that Scots was the major influence on the English of Northern Ireland, and the English of western

England influenced the English of Southern Ireland. However, Filppula (2004: 73) contends that "the morphology and syntax of Irish English follows the main patterns found in the other British Isles Englishes. This is particularly true of 'educated' IrE, which is not surprising considering that (British) Standard English has traditionally provided the principal norm for the teaching of English in Irish schools".

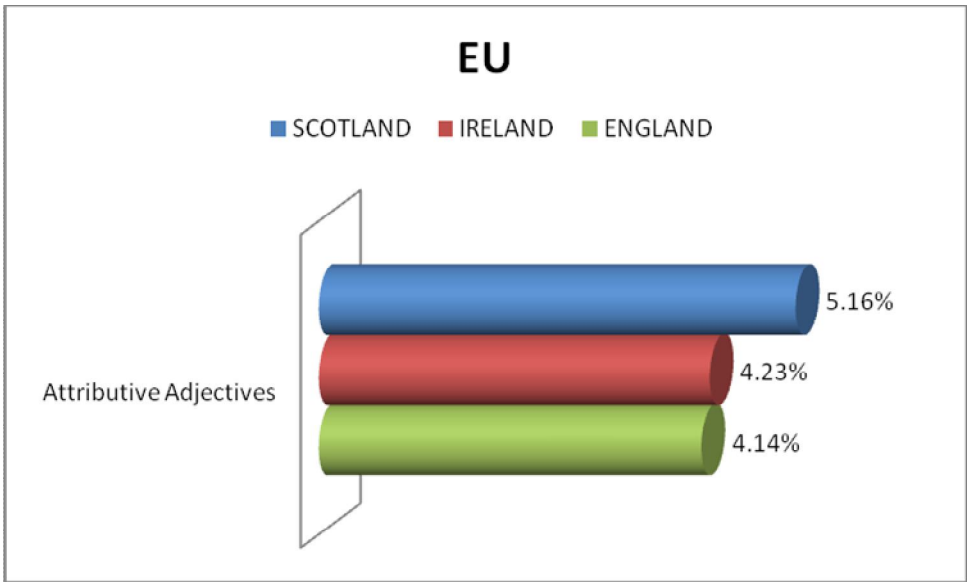
Regarding the geographical distribution observed in this study, although the ANOVA test proved there are no paramount differences, authors educated in Scotland (see [142] below) use attributive adjectives more frequently than any other English-speaking territories in Europe (5.16%). Ireland (4.23%) and England (4.14%) come next as shown in examples [143] and [144], respectively.

[142] *the Scandinavian countries from which the German races* (Masson, 1855: 76)

[143] *of the good old Spanish wine of those days* (Bennett, 1862: 56)

[144] *of the naval power to the present crisis of public affairs* (Adolphus, 1802: 70)

The overall frequencies of use of attributive adjectives by European authors are displayed in Graph 23 below:



Graph 23. Use of attributive adjectives according to geographical distribution: Europe

Although the difference in the use of attributive adjectives between English and Irish authors is not big, one possible explanation for authors educated in Scotland using more attributive adjectives could be that those texts belonging to *CELisT* contain descriptions of plants and animals, some of them comparing their elements. Their authors might need more attributive adjectives in order to accomplish this goal. Another possible factor for Scottish authors exhibiting more attributive adjectives could be found in the fact that most of their texts belong to *CELisT*, where, according to this study, more attributive adjectives are used. On the other hand, the majority of both Irish and English texts belong to the History texts in *CHET*, discipline which, as has been seen, exhibits a smaller quantity of attributive adjectives.

If we combine the geographical and the sex variables we find that men use a higher proportion of attributive adjectives in England [145a] and Scotland [146a] than women ([145b] and [146b]). Since there are no texts written by Irish women, Ireland is not shown in the graph.

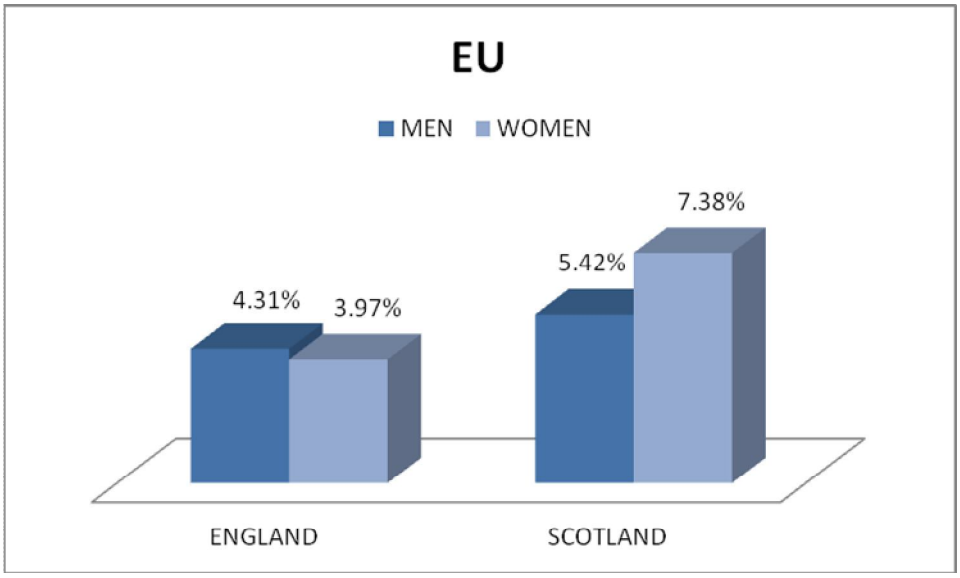
[145a] *the leaves of the perennial snake-weed in wet situations* (Withering, 1776: xxiv)

[145b] *since the young king had been in such strict alliance* (Callcott, 1828: 222)

[146a] *they must have had very large and considerable arteries* (Keill, 1719: 158)

[146b] *the whole plant has a strong foetid fishy smell* (Blackwell, 1737: 25)

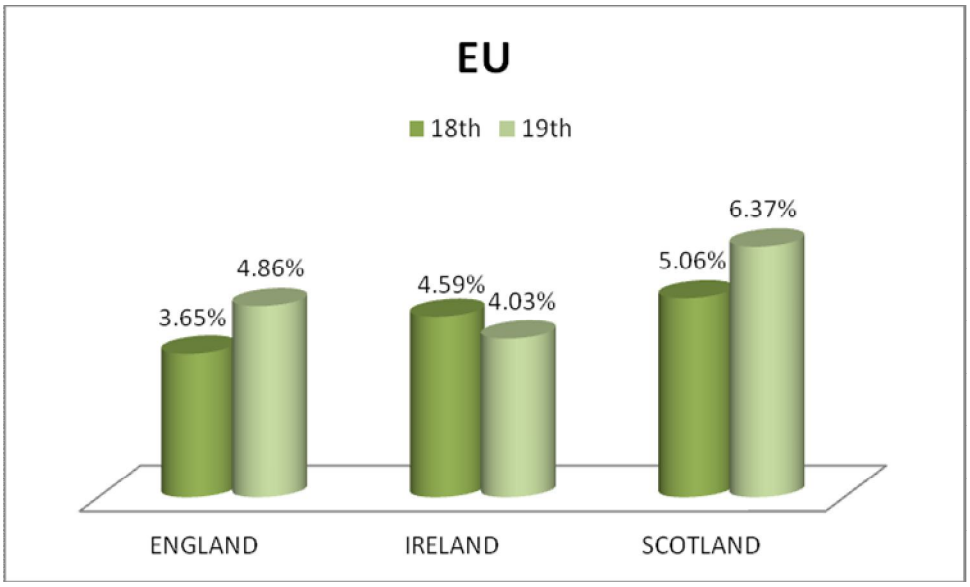
When applying the t-test, it showed no significant differences between male and female authors educated in England. Notwithstanding, no statistical test was applied to samples by authors educated in Scotland because only one sample was written by a woman. The results obtained can be explained on the grounds that men in general tend to use more attributive adjectives than women as Graph 24 shows.



Graph 24. Use of attributive adjectives according to European male and female authors

All in all, my data revealed that authors educated in Ireland and Scotland show a higher proportion of attributive adjectives in nineteenth-century texts.

This is represented in Graph 25 below:



Graph 25. Use of attributive adjectives by European author per century

The frequency and use of the different categories of attributive adjectives proposed by Huddleston and Pullum (2002) is discussed in the next subsection.

4.4.2.1. Huddleston and Pullum's categorisation

As occurred in previous sections when dealing with other variables, not all the categories are present in the three countries under survey. For the geography variable, Table 28 shows that no Transferred or Process-oriented attributives were found in texts written by authors that have acquired their writing habits in Ireland.

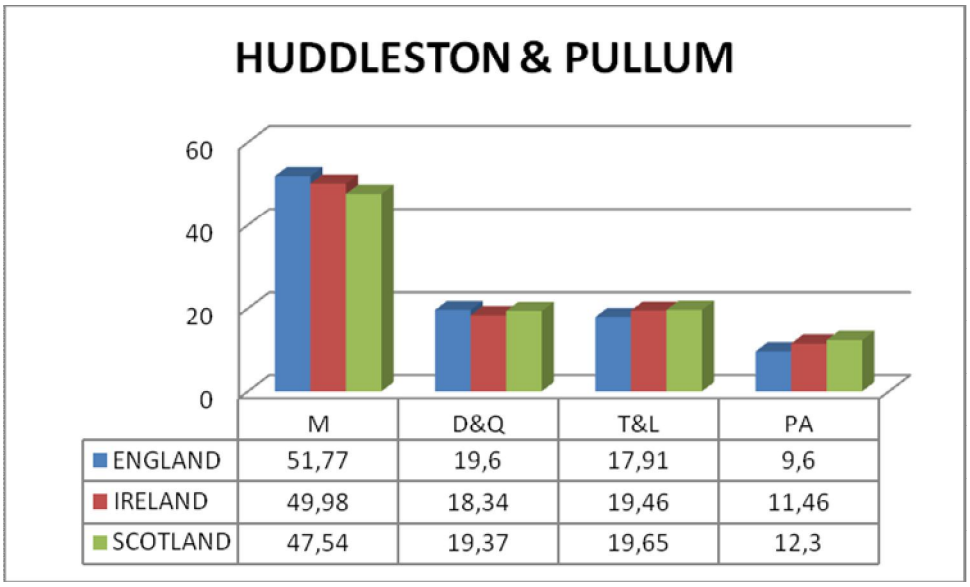
Modal attributives is the category most often used even though the statistical tests do not shed any light upon the significance of differences

among the use of the eight categories put forward by Huddleston and Pullum (2002). Authors educated in England are the ones showing the highest proportion of Modal attributives and Degree and Quantifying ones. In turn, the authors who acquired their writing habits in Scotland use more Particularising and Temporal and Locational attributives. The differences in the use of Expressive, Associative, Transferred and Process-oriented attributives are so low that definitive conclusions cannot be presented.

	England	**Ireland**	**Scotland**
M	51.77%	49.98%	47.54%
D&Q	19.6%	18.34%	19.37%
T&L	17.91%	19.46%	19.65%
PA	9.6%	11.46%	12.3%
E	0.99%	0.7%	1%
A	0.06%	0.04%	0.09%
T	0.03%	0	0.06%
PO	0.005%	0	0.01%

Table 28. Use of attributive adjectives by European authors according to Huddleston and Pullum's categorisation

Graph 26 below shows the use of Modal, Degree and Quantifying, Temporal and Locational and Particularising attributives by the authors educated in Europe.



	M	D&Q	T&L	PA
ENGLAND	51,77	19,6	17,91	9,6
IRELAND	49,98	18,34	19,46	11,46
SCOTLAND	47,54	19,37	19,65	12,3

Graph 26. Use of attributive adjectives by European authors according to Huddleston and Pullum's categorisation

The fact that authors educated in England exhibit more Modal attributives (see [147] for examples) could be explained by the existence of samples written by English authors, many of which are descriptions. This would imply a higher use of this kind of attributives in order to fulfil this task.

[147] *as a vital part of the English defence* (Burrows, 1895: 170)

Although the difference in the frequency of Degree and Quantifying attributives between English and Scottish writers is small (see Graph 26 above), one possible explanation for the former using a higher proportion of Degree and Quantifying attributives (see [148] for an example) could be found in the nature of the texts themselves. Many of the English texts

analysed deal with descriptions of people, which might imply a higher use of this kind of attributives when describing their achievements. Another possible factor for the English writer using more Degree and Quantifying attributives could be that, according to the contemporary author O'Brennan (1859), dimension or measurement is expressed by a noun instead of an adjective in Irish.

[148] *takes place with <u>less</u> regularity* (Marshall, 1893: 350)

Scottish authors show a higher proportion of Temporal and Locational attributives which could be grounded on the fact that their *CELisT* texts deal with comparisons among the components of nature (see [149] for an example). It is also Scottish authors the ones who use more Particularising attributives. Scottish texts address issues that require greater use of these adjectives. Of the total of the thirteen Scottish texts analysed ten of them (76.92%) are more prone to use Particularising attributives. Such is the case of history texts, or the ones comparing the components of nature (where the author has to specify which member he/she is talking about, which is what Particularising adjectives do), or texts dealing with the description of things in a particular place. Irish authors are the second in the use of these attributive adjectives, with a 72.72% of those texts, and English are the ones

using less Particularising adjectives (67.39%). In [150] I show you an example of Particularising attributive by a Scottish writer.

[149] *its bottom leaves upon long foot stalks* (Blair, 1723: 14)

[150] *what a wonderful arrangement of muscular, respiratory, circulating, secretive and digestive organs* (Dalyell, 1848: 139)

The use of stative and dynamic adjectives by authors educated in Europe is studied in the next subsection.

4.4.2.2. Stative vs. Dynamic

In the three territories analysed all writers seem to prefer stative rather than dynamic adjectives (see Table 29 for details). Those educated in Ireland are the ones using a higher percentage of dynamic adjectives (6.6%), closely followed by those educated in England (6.33%). Authors educated in Scotland come last (5.85%).

	Stative	**Dynamic**
Ireland	93.39%	6.6%
England	93.66%	6.33%
Scotland	94.14%	5.85%

Table 29. Stative and dynamic adjectives by European authors

O'Donovan (1845) states that in Irish English, although the majority of adjectives are postnominal [151], the adjectives showing emphatic meaning precede the nominal head [152].

[151] *a writer much more fanciful than correct* (Hardiman, 1820: 36)

[152] *an ignorant brute of an officer* (Stock, 1800: 41)

In [153], [154] and [155] one can see examples of dynamic adjectives by Irish, English and Scottish writers, respectively.

[153] *this rude lump* (Brickell, 1737: 112)

[154] *the teachers of passive obedience* (Smyth, 1840: 54)

[155] *as a reward of his faithful services* (Crawfurd, 1710: 83)

The use of attributive adjectives by authors educated in North America will be studied in subsection 4.4.3.

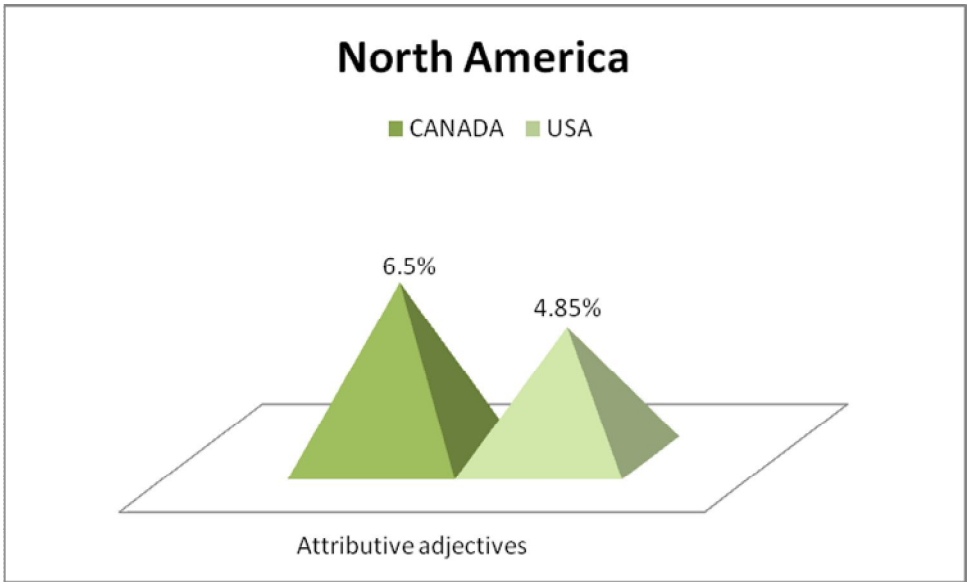
4.4.3. North America

Schneider (2006) claims that Canadian English is traditionally described as a mixture of British and American features. This is due to two main reasons. On the one hand, the fact that the British colonisation started

in the second half of the eighteenth century and the English gained control over the French colony. On the other hand, we must also take into account that many of the people settling in Canada came from the United States. Some authors, such as Millward (1996) and Gold (2004), also mention the Scottish and Irish influence on Canadian English. Crystal (2006) argues that thousands of Scots moved to Canada at the end of the eighteenth and the beginning of the nineteenth century and this increased the English-speaking population of Canada. The first English school in Upper Canada opened in 1785 and it is quite difficult to determine the actual proportion of American teachers in these early years (Gold, 2004). In fact, these first teachers were not American, but, according to Canniff (1872, cited in Gold, 2004), they were generally Irish.

Millward (1996) and Crystal (2006) state that the syntax of Canadian English is for all practical purposes identical to that of American English. However, Warkentyne and Brett (1981) believe that Canadian English exhibits many features typical of British English.

My data show that Canadian authors use more attributive adjectives than the ones educated in the United States (6.5% and 4.85%, respectively). This information is displayed on Graph 27. Since there is just one sample by a Canadian author in my material, the results as to the highest use of attributive adjective on the part of Canadians cannot be taken as a reference.



Graph 27. Use of attributive adjectives in northern American texts

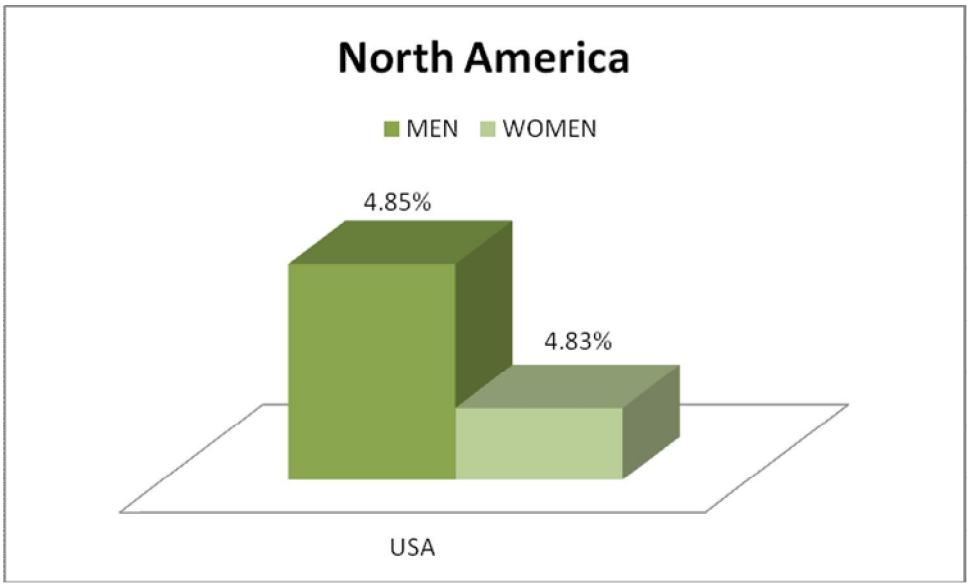
However, the French influence on Canadian English in Lower Canada, where the Canadian author acquired his writing habits, could account for these results. According to Laenzliger (2005), the adjective always follows the noun in French. The phrases in [156] and [157] are examples of attributive adjective (prenominal and postnominal, respectively) found in the Canadian sample. [158] shows an example of attributive adjective written by an author educated in the United States of America.

[156] *both as a political and commercial centre* (Gray, 1872: 375)

[157] *a route 3,240 feet lower than any of the passes* (Gray, 1872: 378)

[158] *the single genital opening* (Packard, 1898: 23)

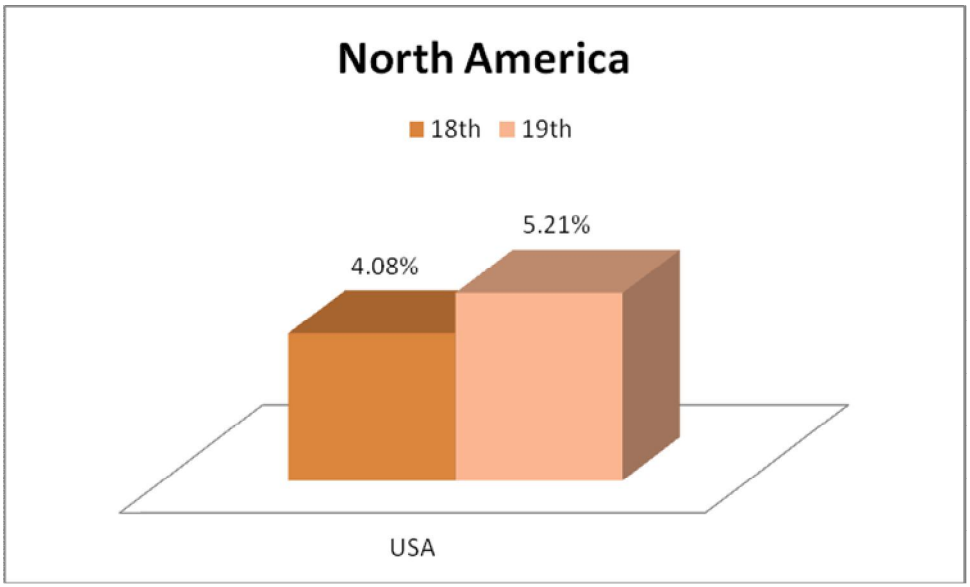
As regards the sex of the authors, we can only analyse differences in the United States of America, since no women educated in Canada have been recorded. As we have seen in previous sections, men educated in the United States tend to use more attributive adjectives than women. As Graph 28 shows, differences between the sexes are very low.



Graph 28. Use of attributive adjectives per sex in northern American authors

Not surprisingly, Graph 29 below shows that authors educated both in the United States of America and in Canada, have a higher proportion of attributive adjectives in nineteenth-century texts. Only authors educated in

the United States have been studied in the eighteenth-century since the corpus contains no samples by authors educated in Canada for this period.



Graph 29. Use of attributive adjectives per century in authors educated in the United States

Huddleston and Pullum's semantic classification will be applied in the next subsection. In it we will see the differences in the use of the eight categories proposed by these authors in their 2002 work.

4.4.3.1. Huddleston and Pullum's categorisation

It goes without saying that not all the categories of attributive adjectives are present in this section. Table 30 below shows that there are no Transferred and Process-oriented attributives in the texts written by North American authors and no Associative and Process-oriented attributives in

the Canadian text. According to this study, authors educated in Canada and the United States of America tend to use a good number of Modal attributives. Our writer from Canada uses more Temporal and Locational attributives (31.49% vs. 19.93%) and Particularising attributives (21.55% vs. 8.33%) than those from the United States who exhibit a greater amount of Modal attributives (49.74% vs. 33.18%) and Degree and Quantifying attributives (20.99% vs. 13.14%). The differences in the use regarding Associative, Expressive, Transferred and Process-oriented attributives are so low that we cannot reach any definite conclusions.

	USA	**Canada**
M	49.74%	33.18%
D&Q	20.99%	13.14%
T&L	19.93%	31.49%
PA	8.33%	21.55%
E	0.97%	0.45%
A	0.02%	0
T	0	0.15%
PO	0	0

Table 30. Use of attributive adjectives by Northern American authors according to Huddleston and Pullum's categorisation

The results of this study could be explained by the French influence on Canadian English and the postpositive position occupied by adjectives denoting colours and form (within the category of Modal attributives) in examples [159a-b] and the ones denoting quantity and size (within Degree and Quantifying attributives) in examples [160a-b] (Laenzliger, 2005). On the other hand, [161a-b] and [162a-b] display examples of Modal

attributives and Degree and Quantifying attributives used in attributive position.

[159a] *to a port more open than Odessa* (Gray, 1872: 375)

[159b] *through lands more rich than Europe's grain fields* (Gray, 1872: 375)

[160a] *to the maritime provinces alone, the last two concessions* (Gray, 1872: 353)

[160b] *territories immense in extent* (Gray, 1872: 374)

[161a] *in a dark night, in an open boat* (Warren, 1805: 259)

[161b] *its main value is in its immense mineral deposit*s (Gray, 1872: 376)

[162a] *and those which life in total darkness are white* (Packard, 1898: 30)

[162b] *can be little doubt* (Gray, 1872: 352)

According to Warkentyne and Brett (1981), Canadian English exhibits many features of British English. Scholars such as Millward (1996) state that thousands of Scots went to Canada at the end of the eighteenth century and the beginning of the nineteenth century and it was in texts by authors educated in Scotland, that more Particularising attributives were found [163a-b]. This might also explain why more Temporal and Locational

attributives are found in my Canadian sample, since these adjectives are abundantly found also in Scottish authors [164a-b].

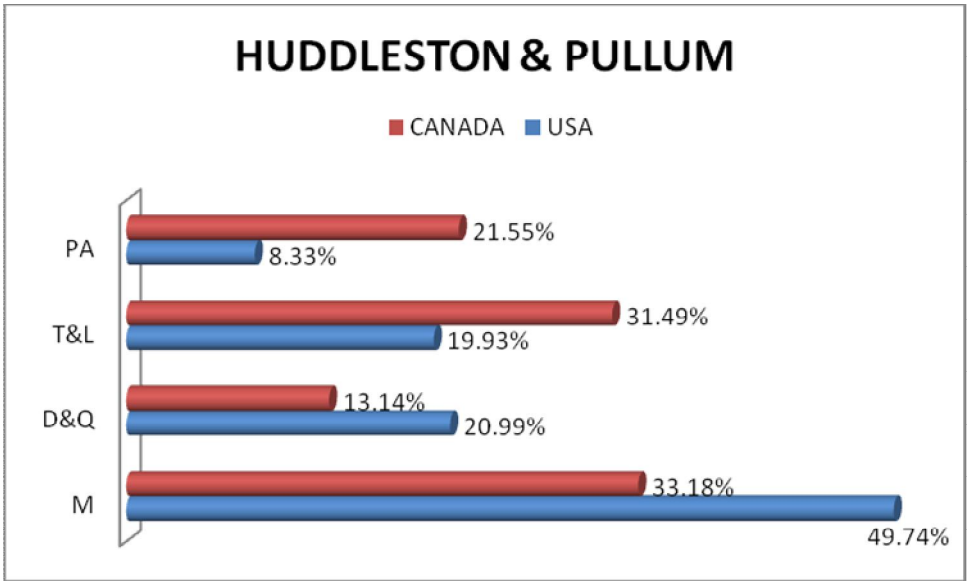
[163a] *of the carbonic acid* (Lincoln, 1832: 299)

[163b] *by the Imperial Act* (Gray, 1872: 367)

[164a] *never found in northern coasts* (Agassiz, 1859: 57)

[164b] *the subsequent attempts* (Gray, 1872: 362)

Graph 30 below summarises the differences in the frequency and use of Modal, Degree and Quantifying, Temporal and Locational and Particularising attributives by authors educated in North America.



Graph 30. Use of attributive adjectives in northern America according to Huddleston & Pullum's categorisation

In the next subsection I will study the possible differences in the frequency and use of stative, in contraposition to dynamic, adjectives by those authors that have acquired their writing habits in North America.

4.4.3.2. Stative vs. Dynamic

It is the class of stative adjectives the one most abundantly used by the authors educated in Canada and those who acquired their writing habits in the United States. However, focusing on dynamic adjectives only, and as Table 31 below shows, it is in those texts written by the authors educated in the United States where more adjectives of this kind were found (8.22% vs. 6.55%).

	Stative	**Dynamic**
USA	91.77%	8.22%
Canada	93.44%	6.55%

Table 31. Stative and dynamic adjectives by Northern American authors

The reason why that the Canadian text shows a lower proportion of dynamic adjectives is two-fold. On the one hand, men used less of this kind of adjectives and, on the other, there is a decrease with respect to the amount found in the preceding century. Nevertheless, it is important to keep in mind that, since only one text from Canada was analysed; no significant

conclusions can be made. Examples of dynamic adjectives by North American authors can be seen in [165] and [166], respectively.

[165] *an unhappy instance of the fatality* (Bancroft, 1769: 217)

[166] *in the disgraceful rout* (Gray, 1872: 364)

The last variable analysed in this work is text type. In the next section I will focus on how attributive adjectives are distributed in the different text types found in *CeLiST* and *CHET*.

4.5. The Text Type variable

There is no general agreement on the distinction between the terms *genre* and *text type*; for example, linguists as Crystal and Davy (1969), De Beaugrande and Dressler (1981) or Stubbs (1996) do not differentiate *genre* and *text type*. On the other hand, Martin (1984: 25) defines genre as "a staged, goal-oriented, purposeful activity in which speakers engage as members of our culture". Biber (1988) believes these two terms are clearly differentiated. For him genre refers "to categorizations assigned on the basis of external criteria" and text types are "assigned on the basis of use rather than on the basis of form" (Biber, 1988: 70). The same author defines text type as "groupings of texts that are similar with respect to their linguistic form" (Biber, 1988: 170). Finally, Swales (1990: 58) defines genre as "a

class of communicative events, the members of which share some set of communicative purposes which are recognized by the expert members of the parent discourse community". In this study I will follow those linguists, such as Martin or Biber, that believe there is a difference between genre and text type.

The eighty texts analysed correspond to seven different text types: "Textbook", "Letter", "Lecture", "Essay", "Treatise", "Article" and what *CC* compilers call "Other", which in this particular case includes catalogue, biography, and travelogue. Table 32 summarises the number of attributive adjectives, words and texts per text types.

	N. of SAMPLES	**ADJECTIVES**	**WORDS**
TREATISE	52	23,352	527,502
TEXTBOOK	8	4,639	80,521
ESSAY	7	3,144	70,224
LECTURE	5	2,324	50,225
OTHER	4	1,466	40,250
LETTER	2	1,028	19,842
ARTICLE	2	824	19,887

Table 32. Data regarding text types

In order to have a better understanding of the results obtained, and following Swales (1990), I will give a brief description of each text type. The *Oxford English Dictionary* describes each text type as follows:

- "Textbook" is "a manual of instruction in any science or branch of study".

- "Letter" is "an article or report describing the social, political, or cultural aspects of a particular situation or place".
- "Lecture" is described as "A discourse given before an audience upon a given subject, usually for the purpose of instruction".
- "Essay" is "A composition of moderate length on any particular subject, or branch of a subject; originally implying want of finish, 'an irregular /undigested piece' (Johnson), but now said of a composition more or less elaborate in style, though limited in range."
- "Treatise" is defined as "a book or writing which treats of some particular subject; commonly one containing a formal or methodical discussion or exposition of the principles of the subject".
- "Article" has been defined as "A non-fictional piece of writing forming part of a journal, encyclopaedia, or other publication, and treating a specific topic independently and distinctly".

The last category in the *Coruña Corpus* taxonomy of texts I am using is called "Other", which as seen before comprises biographical catalogue, biography, and travelogue. Biography is defined by the *Oxford English Dictionary* as "A written account of the life of an individual, esp. a historical or public figure; (also) a brief profile of a person's life or work. Later more generally: a themed narrative history of a specific subject in any

of various written, recorded, or visual media"; and Travelogue as "An (illustrated) lecture about places and experiences encountered in the course of travel; hence a film, broadcast, book, etc., about travel; a travel documentary".

Not all these text types are present in the two disciplines under survey, as there are no Letters in *CHET* or Other in *CELisT*. Table 33 shows the number of samples of each text type in the two disciplines.

	CHET	***CELisT***
Article	1	1
Essay	3	4
Lecture	2	3
Letter	0	2
Other	4	0
Textbook	2	6
Treatise	28	26

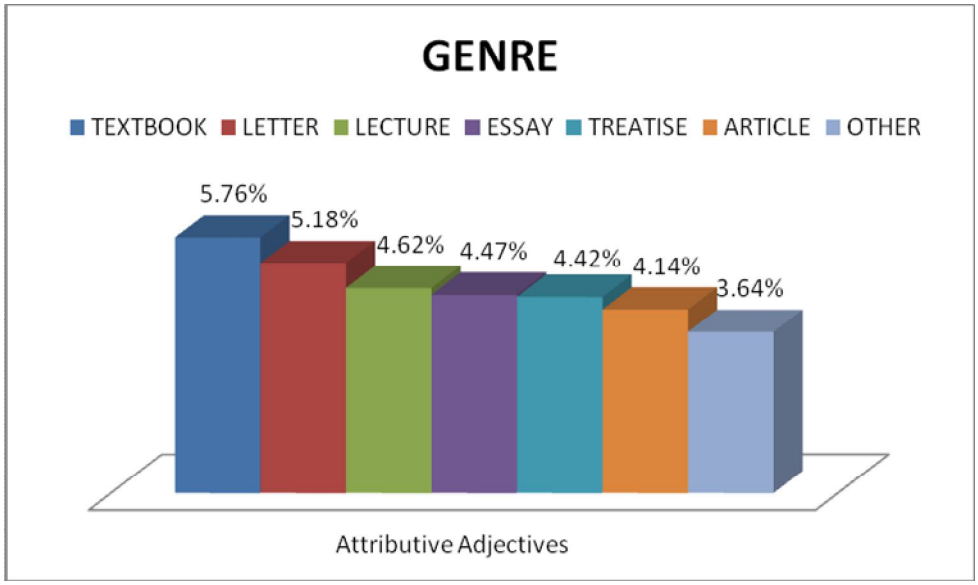
Table 33. Text type per discipline

The next subsection will deal with the study in some depth of the use and frequency of the attributive adjectives in the seven text types found.

4.5.1. Text Type analysis

According to my data, the text type containing the highest number of attributive adjectives is "Textbook" (representing 5.76% of the words in textbooks), followed by "Letter" (5.18%). In descending order of frequency, the third text type in using attributive adjectives is "Lecture" (4.62%).

"Essay" (4.47%) and "Treatise" (4.42%) are the fourth and fifth text types, respectively, in the frequency of use of attributive adjectives. These text types are followed by "Article" (4.14%) and by "Other", which is the category containing fewest attributive adjectives (3.64%). Graph 31 below summarises the results obtained.



Graph 31. Use of attributive adjectives per text type

Although the difference in the use of attributive adjectives between "Textbook" and "Letter" is not big, one possible reason for the former showing a higher proportion of attributive adjectives could be found in the nature of this text type. Most of the texts belonging to "Textbook" are descriptive, using more attributive adjectives. As was previously mentioned, "Textbook" has been defined as a book specially written as a study of a

particular subject, which might imply many attributive adjectives. On the other hand, it is worth noting that most of the textbooks analysed were written in the nineteenth century in the Life Sciences discipline. As could be expected, most samples were authored by men. [167] displays an example of attributive adjectives in a "Textbook" which belong to the *CELisT* subcorpora and has been written by a man.

> [167] *in a viscid, transparent, colourless, unestable albuminoid* (Macalister, 1876: 1)

Contrary to what would be expected, "Letter" in my corpus is a descriptive text type since authors use the letter as an excuse to describe their environment to their addressees and to the reading public. This characteristic, along with the fact that the two letters analysed in this study were written in England (where more attributive adjectives are used), could help explain the predominance of attributive adjectives in this particular text type. This is one of those cases in which not only one, but several factors are playing a part. In [168] an example of attributive adjectives in "Letter" can be found.

> [168] *in saving those noble animals for worthier purposes* (Pennant, 1766: 5)

As has been previously seen, the purpose of lectures is to instruct. In order to fulfil this aim and to be able to explain things in an easy way, authors of this text type might need a large number of adjectives. On the other hand, if we pay attention to the period in which they were written, the five lectures analysed belong to the nineteenth century, when more attributive adjectives were used. Example [169] illustrates the use of attributive adjectives in "Lecture".

[169] *were of rare and irregular occurrence* (Petrie, 1839: 82)

"Essay" and "Treatise" ([170] and [171], respectively) are both represented by a similar number of texts in the two disciplines under survey and, in the case of treatises, in the two centuries analysed.

[170] *of the regular and perfect metamorphosis* (Dalyell, 1848: 152)

[171] *to make up an absolute and final peace* (Tyrrell, 1704: 954)

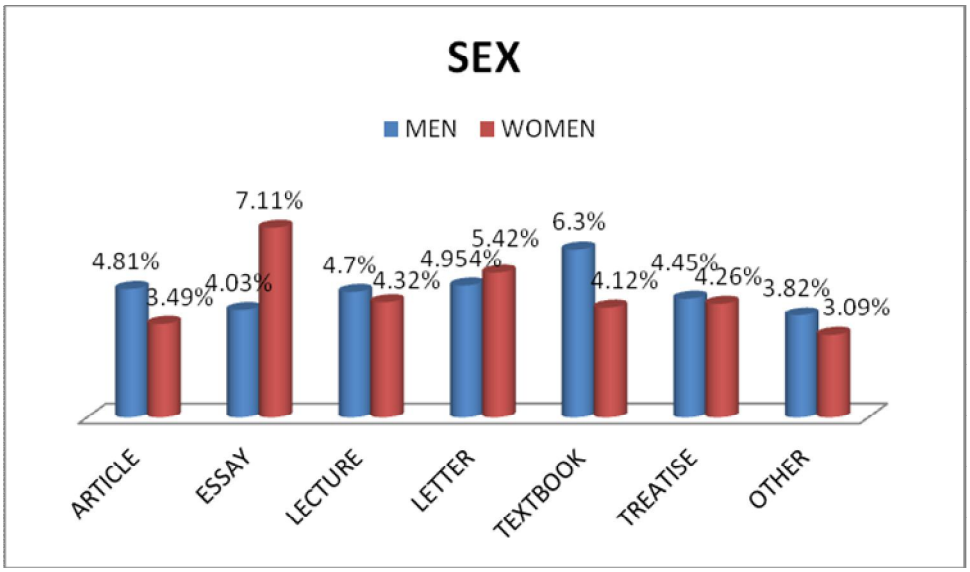
"Article" and "Other" are the text types using fewest attributive adjectives. The purpose of the "Article" could be propagating news or research results, which could give us an idea of why this text type uses such a low proportion of adjectives. In the case of "Other", as pointed out before, it encompasses

biographies, which are brief profiles of a person's life. This might explain the even lower proportion of attributive adjectives in this group, since the very nature of the text types it contains and the subject matters they address do not seem to require so many adjectives. Examples of attributive adjectives in these two text types ("Article" and "Other") can be seen in [172] and [173], respectively.

[172] *the regular monastic life was begun* (Cooke, 1893: 641)

[173] *that his black thick eye-brows* (Stock, 1800: 72)

If we focus on the relation between the seven different text types found in the samples and how the sex of the author may have some influence on language choice, we have that, in all the text types studied, except for "Essay" and "Letter" (see Graph 32), men show more attributive adjectives than women. These results are not surprising since, as previously said, I have found that men exhibit a higher proportion of attributive adjectives in scientific texts in general.



Graph 32. Use of attributive adjectives per text type and sex

Seven essays were found in my material, only one of which was written by a woman. That is the reason why I cannot point to any definitive conclusion. This essay written by Phoebe Lankester (see [174] for an example) is a description of wild flowers, which might suggest a more abundant presence of attributive adjectives mainly denoting colours. This kind of adjectives is characteristic of women's writing, as has been previously specified.

> [174] *the dull yellow blossoms of this dangerous plant* (Lankester, 1879: 102)

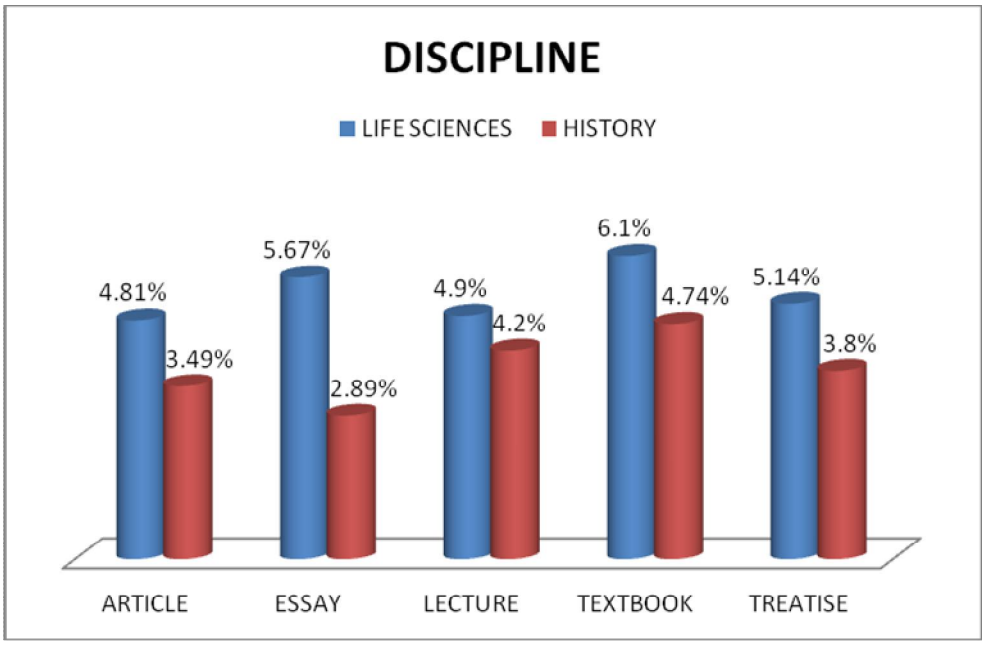
Women also showed a higher proportion of attributive adjectives in Letters. This could be due to the fact that the Letters contained in the corpus, although scientific in character and content, still preserve some fragments

which are more intimate. Hence, the higher use of attributive adjectives when compared to letters written by men. An example extracted from a letter by Priscilla Wakefield can be found in [175a]. In turn, [175b] displays an example of attributive adjectives by Pennant, a male author.

[175a] *of a brilliant copper colour* (Wakefield, 1816: 30)

[175b] *the dung is a remarkable rich manure* (Pennant, 1766: 12)

Paying now attention to the relation between the text types found and the disciplines analysed, although not all text types are equally represented in my corpus (there are no letters in the History discipline and no samples belonging to "Other" in Life Sciences) the results show that authors included in the *Corpus of English Life Sciences Texts* (*CELiST*) were the ones using more attributive adjectives (see Graph 33 below), which is consistent with this study. We cannot forget that Life Sciences can be considered a descriptive discipline.



Graph 33. Use of attributive adjectives per text type and discipline

Examples of attributive adjectives in Life Sciences texts corresponding to each of the text types found ("Article", "Essay", "Lecture", "Letter", "Textbook" and "Treatise") are displayed in [176]-[181].

[176] *their more favourite food is a small beetle* (Jenner, 1824: 25)

[177] *with a stronger attractive force* (Keill, 1719: 155)

[178] *we cannot produce equal physiological divergences* (Huxley, 1863: 111)

[179] *with a smooth, yellow, semi-transparent spots* (Wakefield, 1816: 45)

[180] *between the numerous kindred of any ancient and noble family* (Darwin, 1859: 431)

[181] *the ancient seat of the Scotch monarchy* (Adams, 1795: 97)

On the other hand, the ones found in History texts ("Article", "Essay, "Lecture", "Textbook", "Treatise" and "Other") are shown in [182]-[187].

[182] *the ordinary sources of monastic income* (Cooke, 1893: 629)

[183] *a sacrifice in its truest and most proper sense* (Chapman, 1750: 11)

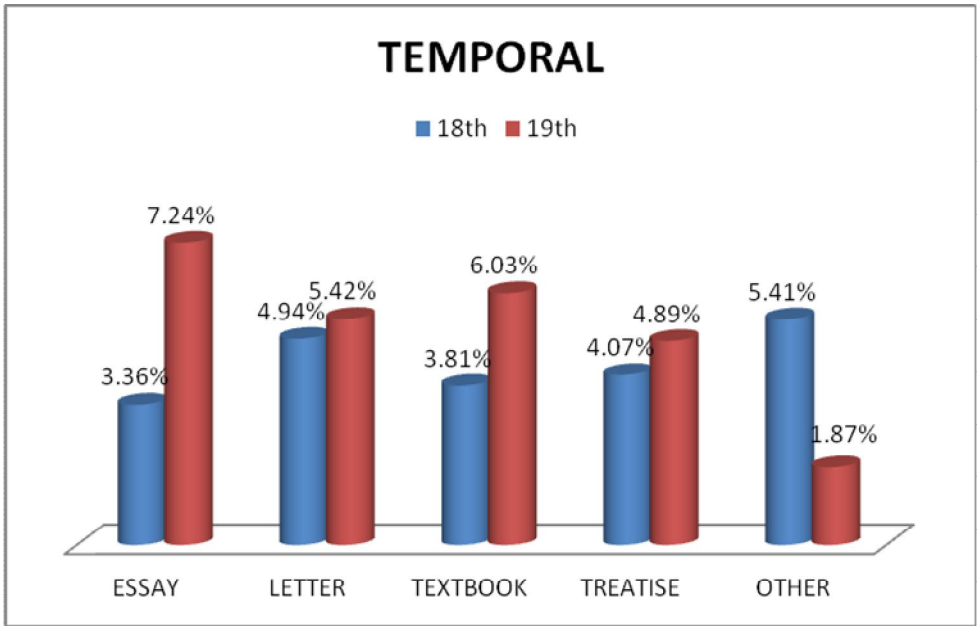
[184] *from the English and French fleets* (Smyth, 1840: 57)

[185] *with extreme veneration by the Hungarian people* (Masson, 1855: 93)

[186] *in the warmer and alpine districts* (Jardine, 1835: 99)

[187] that a considerable part of our good bishop's time (Britton, 1814: 45)

When interweaving two variables such as text type and period, I realised that not all text types were represented since no samples of "Article" in the nineteenth-century or samples of "Lecture" in the eighteenth-century had been collected. Graph 34 below shows that all text types represented in both centuries except for "Other" use more attributive adjectives during the nineteenth century in accordance with what we have been seeing so far.



Graph 34. Use of attributive adjectives per text type and century

The fact that "Other" shows more attributive adjectives during the eighteenth century could be accounted for by the presence of a biography in the eighteenth-century section of the corpus and a description of a country in the nineteenth one. Both extracts are descriptive and this might imply a higher use of attributive adjectives. An example of attributive adjectives in "Other" during the eighteenth and nineteenth centuries are shown in [188] and [189], respectively.

[188] *young men of warm passions are exposed* (Cornish, 1780: 7)

[189] *this bold and novel defiance* (Britton, 1814: 45)

The content of the next subsection will revolve around the presence of the eight categories proposed by Huddleston and Pullum which will be dealt with in each of the text types found in my material.

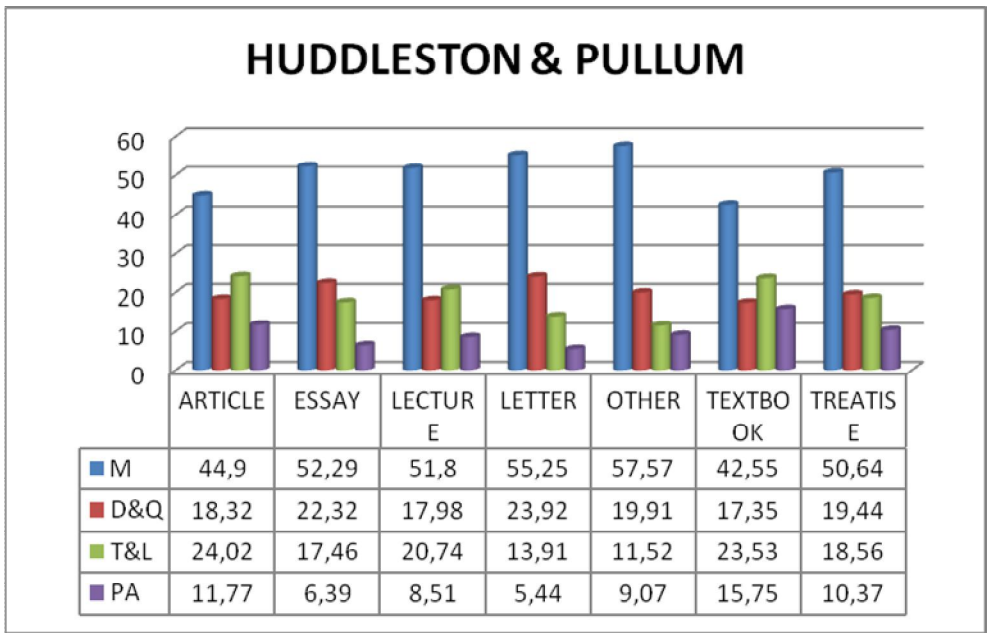
4.5.1.1. Huddleston and Pullum's categorisation

As in previous sections, and illustrated in Table 34 below, not all the eight adjectival categories of Huddleston ad Pullum (2002) can be analysed, since there are no Process-oriented and Transferred attributives in "Article"; no Associative, Process-oriented and Transferred attributives in "Lecture"; no Associative, Process-oriented and Transferred attributives in "Letter"; no Associative and Process-oriented attributives in "Other" and no Process-oriented attributives in "Textbook".

	Article	**Essay**	**Lecture**	**Letter**	**Other**	**Textbook**	**Treatise**
M	44.9%	52.29 %	51.8%	55.25 %	57.57 %	42.55%	50.64%
D&Q	18.32 %	22.32 %	17.98 %	23.92 %	19.91 %	17.35%	19.44%
T&L	24.02 %	17.46 %	20.74 %	13.91 %	11.52 %	23.53%	18.56%
PA	11.77 %	6.39%	8.51%	5.44%	9.07%	15.75%	10.37%
E	0.84%	1.27%	0.94%	1.45%	1.77%	0.71%	0.87%
A	0.12%	0.12%	0	0	0	0.04%	0.06%
T	0	0.12%	0	0	0.13%	0.04%	0.02%
PO	0	0.03%	0	0	0	0	0.004%

Table 34. Use of attributive adjectives by text type according to Huddleston and Pullum's categorisation

Graph 35 below shows the use of Modal, Degree and Quantifying, Temporal and Locational and Particularising attributives in the different text types found. Again since the differences among Associative, Expressive, Process-oriented and Transferred attributives are so low, no definitive conclusions can be drawn.



	ARTICLE	ESSAY	LECTURE	LETTER	OTHER	TEXTBOOK	TREATISE
M	44,9	52,29	51,8	55,25	57,57	42,55	50,64
D&Q	18,32	22,32	17,98	23,92	19,91	17,35	19,44
T&L	24,02	17,46	20,74	13,91	11,52	23,53	18,56
PA	11,77	6,39	8,51	5,44	9,07	15,75	10,37

Graph 35. Attributive adjectives per text type according to Huddleston & Pullum's categorisation

As we have already seen in previous pages Modal attributives is the category which is clearly more often used in the whole corpus. Therefore, it is only logical that all the text types found in this study exhibit a high proportion of Modal attributives. However, when analysing individual text types, it is the category "Other" the one that stands out since it contains pieces of biography and travelogue, which include descriptions, more prone

to the use of Modal attributives. Examples of Modal attributives in the text type "Other" can be seen in [190a-b].

[190a] *the architectural features* (Britton, 1814: 67)

[190b] *there is a very handsome place in the church* (Justice, 1739: 4)

We find more Temporal and Locational attributives in "Articles". As previously said, since articles seek to propagate results, they might need this type of attributive adjectives. Examples [191a-b] show cases of Temporal and Locational attributives in "Articles".

[191a] *among modern Cistercium writers* (Cooke, 1893: 625)

[191b] *by some external impulse* (Jenner, 1824: 25)

Despite the fact that there are only two letters in this study, the results obtained seem to indicate that this is the text type where a higher proportion of Degree and Quantifying attributives is recorded. In this particular case, constraints related to subject matter are to be found as the cause for this abundance. Examples of Degree and Quantifying attributives in "Letter" are displayed in [192a-b].

[192a] *of that immense manufacture* (Pennant, 1766: 11)

[192b] *its eggs in little pellets of excrement* (Wakefield, 1816: 29)

Particularising attributives are more often present in "Textbooks" than in other text types. As seen before, male writers, the authors educated in Europe and texts written in the nineteenth century are the ones exhibiting a higher proportion of Particularising attributives. Textbooks are a study of a particular subject, whose purpose might be to give instructions and to provide explanations, for which this type of adjectives is very convenient, as they serve to pick out a specific member or group. Examples [193a-b] illustrate instances of Particularising attributives in "Textbooks".

[193a] *and not to any one marsupial species* (Darwin, 1859: 430)

[193b] *to the Persian prince* (Sewell, 1857: 252)

The possible differences in the frequency and use of stative adjectives as opposed to dynamic ones will be explored in the next section.

4.5.1.2. Stative vs. Dynamic

Stative adjectives predominate over dynamic ones in the whole corpus. However, it is in "Other" that more dynamic adjectives have been

recorded (13.94%). In Table 35 below the percentages of use of stative and dynamic adjectives in the seven text types analysed is presented.

	Stative	**Dynamic**
Other	85.85%	13.94%
Letter	90.78%	8.92%
Treatise	92.69%	6.77%
Essay	94.14%	5.44%
Lecture	94.62%	5.37%
Article	95.38%	4.61%
Textbook	96.18%	3.74%

Table 35. Stative and dynamic adjectives per text type

The higher frequency of dynamic adjectives in "Other" may be accounted for by their somehow narrative and subjective nature. Extracts [194] and [195] display examples of dynamic adjectives in "Other".

> [194] *hoard them for <u>selfish</u> and penurious gratification* (Britton, 1814: 63)
>
> [195] *is a most <u>detestable</u> practice* (Cornish, 1780: 49)

Along this study I have found that in scientific English texts the use of attributive adjectives is higher than that of postpositive adjectives, representing the 95.81% of the total attributives adjectives. Of the eight categories of attributive adjectives proposed by Huddleston and Pullum

(2002), the one more often used is Modal attributives (52.25%), followed by Degree and Quantifying attributives, Temporal and Locational attributives (these two not being too far: 19.45% and 19.28%, respectively) and Particularising attributives (10.46%). The presence of the other four categories (Associative attributives, Expressive attributives, Process-oriented attributives and Transferred attributives) is quite small; it does not reach 1.05% of the total number of attributive adjectives. As expected, stative attributive adjectives, with 93.49% of total attributive adjectives, are more frequently used than dynamic ones. Paying attention to the five different variables applied, Life Sciences is the discipline showing more attributive adjectives (5.31% vs. 3.77%), these adjectives are as well more present in nineteenth-century texts (5.12%) than in eighteenth-century texts (3.96%), and they are, also, more frequently used in texts written by male authors than in those written by female writers (4.58% vs. 4.38%). The authors educated in North America display a higher use of attributive adjectives (5.01% of total attributive adjectives) than the ones educated in Europe (4.35%); among the authors that acquired their writing habits in Europe, Scottish authors have a higher proportion of attributive adjectives (5.16%); on the other hand, among those authors educated in North America, the Canadian writer makes use of a higher proportion of attributive adjectives (6.5%). Finally, the text type with more attributive adjectives is “Textbook” (5.76%).

Once the general data analysis together with the analysis per variables have been presented I will try to offer some conclusions in the following, and last, chapter.

5. CONCLUSIONS

The main goal of this work has been to study the use of the attributive adjective in scientific English in order to discover to what an extent the premise of simplicity and plainness claimed by Bacon and Boyle was fulfilled in the late Modern period. In order to do so, The *Coruña Corpus Tool,* Microsoft Excel and the Matlab statistics toolbox have been applied within a corpus linguistics methodology.

Along this thesis, five variables have been studied, those provided by the *Coruña Corpus* itself, namely, discipline (Life Sciences and History), date of publication (eighteenth and nineteenth centuries), sex and geographical provenance of the author and text type of the text. All these variables have been further analysed from two semantic perspectives. A twofold one that classifies adjectives as stative or dynamic and the one

provided by Huddleston and Pullum (2002) which comprises, in turn, eight different categories.

A total of 808,451 words have been analysed, of which 38,312 were adjectives. Of these 38,312 adjectives, 36,774 were used in an attributive position and 1,538 in postpositive position. Some authors, such as Huddleston (1984) or Huddleston and Pullum (2002), have mentioned that adjectives in postnominal function are much less frequent than those in attributive and predicative functions. I can only state that, in scientific English as seen in my material, predicative adjectives are less frequent than attributive adjectives, due to the fact that his work deals, mainly, with attributive adjectives.

Several authors have tried to classify attributive adjectives from a semantic point of view. According to Fries (1986), those adjectives denoting identity, amount, and attitude of the speaker belong to this group. Other scholars have added those referring to location in space (Bolinger, 1967), mental state or attribute (Fleisher, 2011) and manner and thematic adjectives (Valois, 2006). Since I have followed Huddleston and Pullum's categorisation (2002), the majority of the adjectives analysed in this study belong to one of the categories previously mentioned. As for the binary classification into stative and dynamic, Quirk *et al* (1985) have stated that adjectives are characteristically stative, although many of them can also

have a dynamic use. The greater use of stative adjectives, in comparison to dynamic ones, in this study might prove this statement.

According to Bäckund (2006), some scholars have attested that during the period under survey (eighteenth and nineteenth centuries) there was an increase in the use of modifiers in English in general. It was also stated that, during those two centuries, a trend from postmodification to premodification took place (Lass, 1998; Rissanen, 1999 or Smith, J, 1999). I have found that as centuries go on, and science becomes more specialized (Yeo, 1984), new terminology appears, more precise descriptions are made (Meadows, 1987), a more elaborated style is used (Görlach, 1999,) and more attention to details is paid (Coleman, 1977). All this is paralleled by an increase in the frequency of use of attributive adjectives. As has been demonstrated along this work, the use of attributive adjectives is higher in nineteenth century texts.

Following Bäckund (2006), the group of adjectives more frequently used during the nineteenth century belonged mainly to two categories: that of age and mental state. On the other hand, the less frequent group included the categories of ability, nationality, and physical state. To some extent this is seen in this study. According to my data, the group of adjectives more frequently used in the nineteenth century is the one Huddleston and Pullum called Modal attributives, followed by Temporal and Locational attributives,

which refer to age. The less frequent group is Particularising attributives, which includes adjectives referring to nationality.

According to this study, attributive adjectives seem to be related to the descriptive sciences. Life Sciences, which has been defined as descriptive, is the discipline in which more attributive adjectives have been found.

As for the variable sex, this work sheds a very limited beam of light on male and female differences in scientific writing. Still, I can confirm that it was a hard task for women to write freely and escape from standard writing mainly due to the social pressure of the time. The less frequent use of attributive adjectives by women could be, precisely, a reflection of this fact. Another reason for this not so frequent use of attributive adjectives in female texts might be that they had less access to education. It has also been seen that the frequency of occurrence of attributive adjectives in men and women do not differ depending on the countries or centuries analysed, men always show a higher proportion of them.

My data also reveal that it is language contact the factor that provokes geographical differences in the use of the adjectives under examination. The influence of other languages on English (such is the case of the Gaelic influence on Scottish or Irish English, or the one of French on Canadian English), in which the position of the attributive adjective varies,

makes the frequency and use of attributive adjectives be diverse depending on the countries where the authors have acquired their writing habits.

In terms of text type, the first three exhibiting more attributive adjectives are "Textbook", "Letter" and "Lecture". While "Letter" describes the social, political or cultural aspects of a situation or place (*OED*, 2012), the purpose of both "Textbook" and "Lecture" is to instruct, to explain a given subject. Authors' endeavour was thought to provide accurate, faithful and detailed descriptions of facts and the elements of nature. Then, the descriptive nature of the abovementioned types is what seems to justify the more abundant occurrence of attributive adjectives in these three text types.

Those attributive adjectives that, according to Huddleston and Pullum (2002), do not apply literally to the noun head, such as Process-oriented attributives, Associative attributives and Transferred attributives, as well as those that make an evaluative judgement (Expressive attributives), are not very frequent in scientific texts. A possible explanation for the smaller use of these kind of adjectives could be found in the fact that the scientific texts analysed, those belonging to History and Life Sciences, explain facts (this is the case of the History texts) or describe Nature and its components (like the Life Sciences texts do). Both disciplines present investigations, discoveries, and so on, not giving evaluative judgements; therefore they do not use a great amount of these attributive adjectives.

The attributive adjectives which are more present in this study are what Huddleston and Pullum (2002) call Modal attributives, Degree and Quantifying attributives, Temporal and Locational attributives and Particularising attributives. Modal attributives and Temporal and Locational attributives are, like all attributive adjectives, usually associated with descriptive sciences and are more used in descriptive scientific disciplines. In relation to Degree and Quantifying attributives, it can be said that they are also related to this kind of sciences and text types. These adjectives are, as well, more present in Life Sciences and "Letter", being, as already said, a descriptive science and text type, respectively. On the other hand, "Particularising attributives" seem to be more related to narrative sciences, since these adjectives are more present in History texts, which are more narrative than Life Sciences ones.

This tendency is seen when intertwining the variables. In the variable discipline it can be seen that the of the eight categories proposed by Huddleston and Pullum (2002), the ones more used in Life Sciences are Modal attributives, Degree and Quantifying, as well as Temporal and Locational attributives, which are the adjectives more related to descriptions, like the discipline under survey. On the other hand, in History, which is a more narrative discipline, more Particularising attributives are found.

Regarding the variable time, the use of these categories is influenced by the evolution of scientific English. It is in the eighteenth century when more Modal attributives and Degree and Quantifying attributives are used, and it is also in this century when science must be written in an accurate and precise manner (Meadows, 1987). In the nineteenth century more Temporal and Locational attributives and Particularising attributives are found. It is in this century when science is written in a more elaborated style (Görlach, 1999).

The use of the eight different categories of attributive adjectives depending on the variable sex does not differ much. The only remarkable finding is the difference in the use of Modal attributives, which is higher in the texts written by women. The way women talk, making far more precise discriminations in colours can be the cause for this use; also, according to Lakoff (found in Parlee, 1979), women are said to use more qualifiers in general. As in the general results, when we pay attention to the possible differences between the countries where the authors acquired their writing habits, the influence of other languages, such as French or Irish, on the English language makes the use of the eight categories be diverse as for how authors make use of them. That would be the case of Canadian writers in the use of Modal attributives since in French these adjectives are postponed. This is not the only factor that exerts an influence on authors using the eight categories in a different way. Another possible factor could be the nature of

the texts themselves. Descriptive texts present more Modal attributives or texts dealing with classifications show more Temporal and Locational attributives.

The purpose of each text type would be the cause of the greater presence of each of the categories of Huddleston and Pullum (2002) in different text types. For example, "Other", which is a descriptive text type, is the one with more Modal attributives; "Article", whose purpose is propagating results, uses more Temporal and Locational attributives. Finally, "Textbook", which gives instructions and explanations, has a higher proportion of Particularising attributives. In the case of "Letter" it is not the purpose of the text type, but the subject matter that makes this text type use more Quantifying and Degree attributives.

As could be expected, stative adjectives are, along this study, more present than dynamic ones. As Hatzivassiloglou and Wiebe (2000) have stated, dynamic adjectives are related to subjectivity. This PhD dissertation might confirm this idea, since the discipline containing more dynamic adjectives is History, which is a narrative discipline and remains subject to opinion. If we focus on the variable time, its use is higher in the eighteenth century in which, according to Bentley (1999: 9-10), the authors of history texts "displayed an undercurrent of opinion about the past", creating "texts in which satire forms a crucial part of the tone for the entire enterprise". On the other hand, nineteenth-century authors should not be creative

(Humboldt, 1822). Dynamic adjectives are also more commonly found in texts written by women who, according to Carli (1990), are more social and expressive than men. However, this theory of subjectivity is not valid for the results found in the variable geography. That is explained by the influence of French and Irish languages (where this type of adjectives is postponed). Finally, the text type showing more dynamic adjectives is, again, "Other", which as has already been seen, has been defined as a narrative one and, consequently, subject to opinion.

According to the attributive adjectives found in the two disciplines under survey, one can say that science, during late Modern English period, is mainly descriptive as well as narrative. This is due to the type of attributive adjectives science uses, mostly those related to descriptions (those that Huddleston and Pullum named Modal attributives and Degree and Quantifying attributives) and classifications (Temporal and Locational attributives). Another possible characteristic of late Modern English science is that in science there are no opinions, just facts. This is manifested by the less use of dynamic adjectives and Expressive attributives, which are related to the author's opinion, and those adjectives that, according to Huddleston and Pullum (2002), do not apply literally to the head of a Noun Phrase (Associative attributives, Process-oriented attributives and Transferred attributives).

My initial hypothesis that the frequency and use of attributive adjectives vary throughout the centuries analysed, and that they change depending on the scientific fields in which they are used, has been proved. In addition, it has been seen in this study that the use of attributive adjectives in the two centuries under survey differs, being higher during the nineteenth century. This use is also different in the disciplines analysed. It is in *CELisT* texts where more attributive adjectives have been recorded.

It is during the nineteenth century when, as Meadows (1987) claims, more precise descriptions were made. This fact could be related to the rigour that the Royal Society of London for Improving Natural Knowledge recommends as one of the principles with which science should be conveyed. As previously mentioned, more attributive adjectives are used for the sake of precise descriptions.

In order to have better understanding of the frequency and use of attributive adjectives in scientific English, studying other types of classifications would be helpful. Such would be the case of a syntactic classification, like the one proposed in section 2.4., or to examine the gradability of the adjectives or the dichotomy inherent vs. non-inherent adjectives. Considering the etymological origin of the attributive adjectives to know if somehow it influences their position within the noun phrase would also be a good research. It might also be useful to study in depth the frequency and use of postpositive adjectives, as well as those in predicative

position and the ones functioning as head of a noun phrase, in order to be able to make a more detailed account of the use of adjectives.

Finally, two elements that are important and are of great help when developing any linguistic study are having a corpus to work with and statistical data processing. In the first place, the statistical analysis is essential in order to draw rigorous conclusions from the results obtained, otherwise one would not know to what extent there are statistically significant differences in these results. Moreover, it is crucial to know what kind of statistical analysis should be applied in each case, whether parametric or non-parametric. On the other hand, having access to a corpus greatly facilitates research. Since the texts in the corpus normally have the same "compilation criteria", the analysis is more reliable due to the fact that all texts share the same characteristics. The fact of sharing the statistical tests, the corpus and, perhaps, the databases, facilitates the verification or the refutation of the scientific hypotheses.

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